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The Role of Accounting in the Financial Crisis: Lessons for the Future

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ABSTRACT: The advent of the Great Recession in 2008 was the culmination of a perfect storm of lax regulation, a growing housing bubble, rising popularity of derivatives instruments, and questionable banking practices. In addition to these causes, management incentives, as well as certain US accounting standards, contributed to the financial crisis. We outline the significant effects of these incentive structures, and the role of fair value accounting standards during the crisis, and discuss implications and relevance of these rules to practitioners, standard-setters, and academics.

This article is based on a presentation by Deputy Dean and Professor SP Kothari of the Sloan School of Management, Massachusetts Institute of Technology, at Baruch College on October 25, 2010.

The Role of Accounting in the Financial Crisis: Lessons for the Future

I. Introduction

The Great Recession that started in 2008 has had significant effects on the US and global economy; estimates of the amount of US wealth lost are approximately \$14 trillion (Luhby 2009). Various causes of the financial crisis have been cited, including lax regulation over mortgage lending, a growing housing bubble, the rise of derivatives instruments such as collateralized debt obligations, and questionable banking practices. In addition to these and many other reasons, we explain two factors that partially contributed to the crisis: certain management incentives and fair value accounting standards. This article discusses the causes of the financial crisis, with particular focus on the debated role of the relevant US accounting standards, and summarizes implications for accountants and accounting regulators based on the effect of these existing rules.

Following the dot-com bubble in 2000 and the September 11, 2001 attacks, the U.S. economic policies of low interest rates coupled with easy credit, lower taxes, and the cheap dollar generated significant economic growth from 2000 to 2007. Low interest rates motivated many in the United States to pursue home ownership, a goal long propagated and encouraged by the government as a wise investment and worthy social objective. Easy credit facilitated by agencies such as Fannie Mae and Freddie Mac enabled financial institutions to focus on the lucrative subprime mortgage market. Mortgage lenders initiated a growing number of new home loans, many of which were granted to individuals with a poor credit rating, who would eventually be unable to service monthly mortgage payments once interest rates increased. Unfortunately, gains generated from securitization of the home loans and from income on the servicing of the loans inflated financial profits, motivating executives of mortgage origination firms to focus on quantity, rather than quality, of borrowers. Investors, seeking new investment opportunities,

fueled the demand for mortgage backed securities that were created through securitization of the home loans. Such securities received high ratings from analysts who also did not correctly assess the underlying default risk.

In early 2005, interest rates begin to rise, increasing up to 8.25% in 2007 from 4% in 2004. In response, a large number of homeowners, particularly those with adjustable rate mortgages, began to default on their monthly payments. In 2007, New Century Financial, the second largest subprime mortgage originator in the US, announced a restatement of its financial statements for the first three quarters of 2006 due to under-reserving of certain loan loss provisions. This announcement was followed shortly thereafter by large losses for firms with significant subprime positions, including Bear Stearns, Lehman Brothers, Merrill Lynch, and Citigroup. The market (using the Dow Jones Industrial as a benchmark) dropped precipitously from over 14,000 points in October 2007 to under 7,000 in March 2009, with a drop of almost 2,000 points in one week alone in September 2008. The subprime mortgage woes resulted in a significant and prolonged recession.

The companies engaged in the subprime mortgage business, including both originators/securitizers of loans and purchasers/investors in the securitized instruments, were able to report certain gains on securitization of loans under U.S. accounting standards. Furthermore, companies followed U.S. accounting standards to record loan servicing assets and residual interest assets, as well as certain loan loss reserves, using historical prime mortgage performance to estimate the appropriate value. Finally, purchasers/investors of the securitized instruments accounted for securities under the fair value accounting rules, which permitted the firms to mark (or not mark) certain assets up to fair market value, as measured based on classification of the instrument.

While the actual fair value standards themselves may not have been the culprit behind the financial crisis, we believe that the *inconsistent implementation and subsequent misapplication*

of the standards contributed in three ways to the financial crisis. Specifically, reporting of immediate gains on securitization facilitated and motivated more subprime lending. Second, some amounts originally selected as Level 1 and Level 2 fair values were incorrect, but once borrowers began to default on home loans, firms switched to Level 3 internal estimates rather than adjusting to the true declining fair value. The ability to use these internal estimates enabled firms to continue to assume risk. Finally, the eventual recognition of losses and the ripple effects through the economy resulted in a large, rapid decrease in the amount of banks' capital. For these reasons, we believe that the misapplication of the U.S. accounting standards had some role in the financial crisis.

The article is structured as follows. In Section II, we discuss the economic growth and specific events during the period from 2000 to 2007 that led to the financial crisis; this section is followed by a summary of the key accounting standards related to fair value, securitization, and equity securities in Section III. A brief overview of the Great Recession is included in Section IV. Section V discusses the potential contribution of accounting standards to the crisis, and Section VI concludes with a discussion of considerations for the future.

II. Genesis of the Crisis

Two unusually bad events during 2000 and 2001 contributed to the origin of the crisis. In particular, the technology/dot-com bubble burst in 2000, prompting a domestic economic downturn; shortly thereafter, the September 11, 2001 terrorist attacks occurred, further weakening investor confidence. After reaching a high of 5,132 points on March 10, 2000, the NASDAQ dropped to 1,454 on September 21, 2001 – the lowest level since October 1998. Collectively, these events presaged a significant U.S. recession.

In response, the relatively new Bush administration and the Federal Reserve under the leadership of Alan Greenspan took significant fiscal and monetary policy steps to stave off a recession.

Their three-prong strategy included lowering taxes, lowering interest rates to encourage lending, and devaluing the dollar to facilitate international trade.¹ At the time, many regarded these steps as prudent, and the actions were largely credited with the significant economic growth that occurred over the next seven years. From 2001 to 2007, the country enjoyed large increases in personal wealth, the lowest unemployment rates in four decades, and consistent quarterly GDP growth.² The lowered interest rates and increased income from employment enabled a large new group of Americans to purchase homes, creating more demand for construction materials, consumer durables, and financial services.³ The trickle-down effects from the growth in these industries led to similar prosperity in almost all sectors of the economy. For example, the relatively cheap dollar exported economic growth globally and attracted visitors to the United States, which in turn spurred growth in the leisure, entertainment, hospitality, and retail industries.⁴

Relaxed Lending Criteria and Sub-prime Mortgages

Unfortunately, not all of the economic growth was well-founded. During this period, financial institutions began to engage in significant subprime lending, which refers to higher interest rate loans made to parties who are less credit worthy. Due to relaxed lending criteria, more individuals were eligible for mortgages, and consequently, the new class of home-buyers included not only those who actually qualified under the traditional requirements for a mortgage,

¹ Dollar devaluation might have been a consequence of lowering of interest rates, easy credit, and the U.S. recession.

² Unemployment ranged from only 4-5% during this period, and average quarterly GDP growth was 2.7%, with growth in some periods in 2003 and 2006 ranging from 5-7% (Bureau of Economic Analysis, 2011; Bureau of Labor Statistics, 2011).

³ Housing starts increased from 1.6 million in 2001 to over 2 million per year in 2004 and 2005. Industrial production increased from \$2.4B of value added production in 2002 to over \$3.3B in 2007 (Census Bureau, 2011, Federal Reserve, 2011).

⁴ For example, monthly retail sales increased from \$250B in January 2001 to over \$425B at the end of 2007.

but also many borrowers who would ultimately be unable to repay their loans in the long-term.⁵ Approval for subprime mortgages, referred to as “no document lending,” did not require high credit scores, significant down-payments, or proof of ability to make monthly payments, among other criteria. Furthermore, banks often inadvertently approved many fraudulent loan applications, as some borrowers knowingly misstated qualifying information (such as employment), and subprime mortgage brokers failed to verify crucial information provided by the home-buyer (e.g., employment records or compensation information). However, even if borrowers were unable to pay their loans at some future time, it was likely assumed that the homeowner could ultimately sell the home in an appreciating market for a gain and use the sales proceeds to pay off the mortgage balance. Furthermore, credit was so easily obtainable during this period that a home owner could also simply “walk away” from an existing property with an unpaid mortgage and still be able to procure financing for a new home.⁶ The accessibility of credit fed the growing demand for housing and further inflated housing prices. The effects of these relaxed lending standards and easily obtainable credit were twofold: i) an inflated housing market poised for an inevitable decline in value and ii) the inability of many US homeowners to ultimately make required monthly house payments due to an inherent lack of credit-worthiness.

The idea of “no-document lending” clearly implied that many home loans were quite risky. Traditionally, banks had been unwilling to issue such risky home loans, as ultimately the banking institutions would be liable for any financial loss incurred if the borrower was unable to fulfill his payment obligation. However, in the early years following the dot-com crash and the

⁵ A popular mortgage instrument at the time was an adjustable rate mortgage (“ARM”) that carried a low interest rate, but only for a specified period of time (usually five or seven years). The payments on these mortgages may have been affordable to the latter group of borrowers as long as interest rates remained low; however, to the extent that interest rates increased, these borrowers would no longer be able to service the monthly interest and principal payments.

⁶ Individuals can generally file for bankruptcy under Chapter 7 or Chapter 13 of the US Code. In a Chapter 7 bankruptcy, certain types of property are seized from the debtor and sold by a trustee, who then distributes the proceeds to the original lender. If a home-owner defaults on a mortgage, it is likely that they would file under Chapter 7, and their credit score would be significantly reduced. However, during this period, lending criteria were relaxed so dramatically that a poor credit score due to prior default may not have had a significant effect on the ability to procure a future home loan.

September 11 attacks, banks began to change their policies for mortgage lending. One of the most significant reasons that banks relaxed their lending criteria was their ability to transfer the risk of losses through securitization of loans (discussed below in additional detail), with Fannie Mae or Freddie Mac as the ultimate owner in a large fraction of securitized mortgages. Ryan (2008) cites several related reasons for the explosion in subprime loans, including the strategic switch of commercial banks to retail banking following the technology bust; the consistent increase in housing prices and expected continuation of low losses given default; low mortgage interest rates that continued to decrease through 2003, which made housing affordable despite the market appreciation; reduced revenue from prime mortgages; declining credit spreads; and unprecedented liquidity in global markets that led investors to search for new high yield investment opportunities.

Securitization

As noted above, banks often securitized the risky subprime loans, a process that effectively transferred risk off of the institutions' balance sheets to pools of investors through the use of derivative instruments. In general terms, a securitization of a subprime loan includes the following steps:

1. An "originator" provides a subprime mortgage to a new home owner under relaxed lending criteria.
2. The "securitizer" – either the originator or a distinct firm that purchased the loan from the originator – transfers the mortgage to a separate legal entity known as a Qualifying Special Purpose Entity ("QSPE") or to quasi-governmental institutions such as Fannie Mae or Freddie Mac.
3. The QSPE (or Fannie Mae/Freddie Mac) combines the subprime mortgage with other mortgages that it has purchased and then divides the loans into tranches based on risk and

repayment preference.⁷ The most senior tranche is structured so as to receive the highest rating from the rating agencies. The most junior tranche is often referred to as the residual or equity tranche, as it bears the most credit risk related to losses on the securitized mortgages and would be the first to be eliminated in the event of default.

4. Analysts rate the various tranches, and individual securities tied to each tranche are sold to investors; this type of security is often known as a Mortgage-Backed Security (“MBS”). The lower-rated tranches are often repackaged again (or multiple times) and sold as Collateralized Debt Obligations (“CDOs”). The securities sold from these subsequent securitizations typically receive a higher analyst rating than the original rating of the MBS.
5. The originator, the securitizer, Fannie Mae or Freddie Mac, or a third party insurer provides guarantees for the MBS, which facilitates the higher analyst rating.⁸ The originator/securitizer also retains the residual or equity tranche as a further credit enhancement.

Securitization has existed in the capital markets for years and has historically been successful at spreading the default risk among many parties; its basic principles are well-founded in the economic principle of compensating investors for holding risky investments commensurate with their respective level of risk aversion. However, because many of the third parties and investors who purchased the MBS and CDOs did not assess the underlying mortgages and because of the growing capital market demand for high yield investments, banks began to focus less on ensuring appropriate financial eligibility of borrowers and more on generating additional new loans. This drove profits through the lucrative origination and servicing fees, as well as through fees or securitization gains recorded in income under the existing accounting rules.

⁷ Risk related to these mortgages could be default/repayment risk, as well as pre-payment risk. The tranches may separate the payments to investors into those linked to principal payments, interest payments, etc.

⁸ Third party insurers who generally provide guarantees to issuers of certain instruments are commonly referred to as “monoline” insurers.

Unfortunately, by securitizing the loans, the banks effectively became an intermediary that no longer bore most of the risk related to the original subprime mortgages; rather, the default risk related to the mortgages was now borne by pools of investors who had purchased the MBSs or CDOs. Because of the magnitude of new loans available for securitization (from below \$7 trillion of mortgage loans before 2003 to more than \$10.5 trillion as of the end of 2008), the fee revenue for the banks was significant (Barr, 2009). In effect, default risk assessment was compromised, and the amount of subprime mortgage originations grew from approximately 8% of total residential mortgage originations in 2001-2003 to over 20% in each year from 2004 through early 2007 (Ryan, 2008).

Other Contributing Factors to the Crisis

Two third-party institutions that purchased the risky loans included Fannie Mae and Freddie Mac, publicly traded quasi-governmental bodies. The federal government created Fannie Mae and Freddie Mac in 1938 and 1970, respectively, with the original purpose of providing local banks with federal money to finance home mortgages in an attempt to increase levels of home ownership and the availability of affordable housing in the U.S. Home ownership has generally been considered a worthy social objective and a means through which to improve neighborhoods and communities. Furthermore, given the historical and consistent rise in home prices, investment in a residence has been considered a wise retirement savings tool. Historically, government regulations required that the loans purchased by Fannie Mae and Freddie Mac in the secondary mortgage market meet certain minimum requirements. However, under the Clinton and Bush affordable housing initiatives, these standards were relaxed, and the organizations purchased growing quantities of subprime mortgages.⁹ Given that the publicly traded agencies were able to report increasing revenues, shareholders did not question the underlying practices of

⁹ US Code, Title 12, Chapter 46, Sections 4501 and 4562 were revised under Presidents George H.W. Bush and Bill Clinton.

these institutions. Fannie and Freddie invested over \$515 billion in subprime mortgages from 2003-2006 (Leonnig, 2008).

As noted above, neither investors nor the third parties that sold the securitized loans to investors carefully examined the underlying mortgages to assess the default risk of their investment. Presumably, these groups relied on the reputable rating agencies that had issued the highest level of rating for many of the securitized loan tranches. However, in determining the ratings, these agencies did not thoroughly examine all of the loans, or the repayment ability of the borrowers in the event of an increase in interest rates (particularly for adjustable rate mortgages) (Lowenstein, 2009). Furthermore, the ratings analysts inexplicably assumed that a decline in housing prices was unlikely. Consequently, it appears rating analysts also failed to perform an assessment of potential default risk, which would have likely reduced the amount of capital that was invested in these derivative instruments.

III. Relevant Accounting Standards

The fair value accounting related to securitizations, in our opinion, was a potential contributor to the financial crisis, as income and gains recorded on the securitization transactions inflated earnings and overstated asset balances. How is it possible that the sale of an asset originally recorded at one value could generate income and higher asset balances upon merely transferring this asset to another entity? This proposition seems contrary to the economic substance underlying the related transactions but was the direct result of applying the fair value standards. Furthermore, because executive compensation is often determined based on certain income and equity valuation benchmarks, management of financial institutions were motivated to engage in these securitization transactions that were reported under the existing accounting rules.

This section discusses the relevant accounting rules in more detail and outlines the confounding effects of management compensation structures that further exacerbated the pervasive reporting

and valuation issues. Specifically, we discuss the securitization rules and provide an example of how income and gains are recorded on the financial statements of an *originator/securitizer* in such a transaction. We then assess the *purchaser/investor's* accounting treatment of the financial instruments and the benefit of this reporting for meeting certain regulatory capital requirements. Finally, we discuss how the management incentives for both securitizers/originators and purchasers/investors perpetuated the prevalence of these transactions.

Securitization and Fair Value Accounting

FASB Statement 140 *Accounting for Transfers and Servicing of Financial Assets and Extinguishments of Liabilities* determines how a securitization should be recorded. Under this standard, a firm can account for a securitization transaction as (i) a sale, (ii) a financing, (iii) neither a sale nor financing, (iv) a partial sale, or (v) a partial sale/partial financing. In many instances, banks treated such transactions as a sale and recorded a corresponding gain in income (Dechow et al., 2010).¹⁰ To determine the amount of the gain, as well as the corresponding effects of the transaction on the balance sheet, management must determine the fair value of the related assets. FASB Statement 157 *Fair Value Measurements* (2008) provides guidelines for determining fair value by classifying assets into three categories – Level 1, Level 2, or Level 3. Level 1 assets have observable market prices. Level 2 assets do not have observable market prices but have inputs that are based on such prices. Level 3 assets do not have observable inputs, and therefore, management determines valuation based on internal estimates and models. The financial statements must include significant disclosures related to both these estimates and the methods used by management to arrive at the asset valuations. Given that a market for some of the assets recorded in a securitization transaction (such as Mortgage Servicing Rights or

¹⁰ In their paper, Dechow et al. (2010) state “we refer to this income effect [from the sale of assets in a securitization] as a “gain” since gains are typical. (Indeed, the Wall Street term for the SFAS No. 140 rules governing securitization accounting is “gain on sale” accounting.)”

MSRs, as well as residual interests) does not exist, management estimates were generally used to arrive at the fair value for these assets.¹¹

Below is a sample calculation of gain on a securitization transaction and the corresponding journal entries to record the transaction in the financial statements. The fair values are assumed to have been calculated separately based on management estimates.¹²

¹¹ FASB 157 was issued to provide guidance on how fair value should be determined. Many FASB statements reference the use of fair value, but prior to the promulgation of FASB 157, no clear method had been outlined. Consequently, FASB 157 applies when other FASB Statements refer to the use of fair value or for assets/liabilities to be recorded at fair value. In this paper, we discuss the use of FASB 157 in applying FASB 140 and 115.

¹² Example extracted from the Seventh Edition of the Deloitte Financial Services booklet "Securitization Accounting."

Term Securitization Example*

| | | |
|--|-------------|-----|
| Aggregate Principal Amount of Pool | 100,000,000 | fn |
| Net Carrying Amount | 99,000,000 | [a] |
| Servicing Value | 700,000 | [b] |
| Class IO (Interest Only Strips) Fair Value | 1,500,000 | [c] |
| Class R (Residual Interest) Fair Value | 1,000,000 | [d] |
| Up-front Transaction Costs | 1,000,000 | [e] |

| Deal Structure | Principal Amount | Price | Fair Value |
|----------------|--------------------|-------|-------------------|
| Class A | 96,000,000 | 100 | 96,000,000 |
| Class B | 4,000,000 | 95 | 3,800,000 |
| Total | 100,000,000 | | 99,800,000 |

| Basis Allocation of \$99M Carrying Value | Fair Value | % of FV | \$99M x % | Assets Sold | Assets Retained |
|--|--------------------|----------------|-------------------|-------------------|------------------|
| Class A & B | 99,800,000 | 96.89% | 95,924,272 | 95,924,272 | |
| Servicing Asset | 700,000 | 0.68% | 672,816 | | 672,816 |
| Class IO | 1,500,000 | 1.46% | 1,441,748 | | 1,441,748 |
| Class R | 1,000,000 | 0.97% | 961,165 | | 961,165 |
| Total | 103,000,000 | 100.00% | 99,000,000 | 95,924,272 | 3,075,728 |

| | | |
|-------------------------|------------------|-----|
| Gain Calculation | | [h] |
| Proceeds | 99,800,000 | |
| Less Transaction Costs | (1,000,000) | |
| Amount Sold | (95,924,272) | |
| Gain on Sale | 2,875,728 | |

| | |
|--|------------|
| Journal Entry - Record Securitization | |
| Cash Proceeds | 99,800,000 |
| Servicing Asset | 672,816 |
| Class IO | 1,441,748 |
| Class R | 961,165 |
| Net Carrying Value Loans | 99,000,000 |
| Pre-tax Gain on Sale | 2,875,728 |
| Cash for Transaction Costs | 1,000,000 |

| | | |
|--|--------|--------|
| Journal Entry - Record Fair Value of Retained Interests | | [i] |
| Class IO | 58,252 | |
| Class R | 38,835 | |
| Equity - OCI (If AFS); Income (if Trading) | | 97,087 |

* Extracted from the Seventh Edition of the Deloitte Financial Services booklet "Securitization Accounting."

[a] Net carrying amount equals the principal amount + accrued interest + purchase premium + deferred origination costs - deferred origination fees - purchase discount - loss reserves.

[b] A servicing asset is generated if the benefits of servicing (that is, the fees received related to servicing the loans) exceed the costs. This only becomes a distinct asset when contractually separated from the underlying assets via securitization. Both the benefits and costs are estimated based on fair value.

[c] An "interest only strip" or "IO" relates to certain revenue received by the securitizer in excess of the contractually specified servicing fees. For example, the difference between interest collected and the interest to be paid out to investors could be retained and would be considered IO.

[d] The residual interest ("Class R") relates to the portion of the securitized assets that are retained by the originator/securitizer. This interest can also be referred to as the equity interest.

[e] Includes costs such as underwriting, legal, accounting, rating agency, printing costs, etc.

[f] Price of \$95 for Class B reflects riskier nature of this tranche.

[g] The total fair value of the assets is equal to \$103M. This amount must be allocated to the \$99M of carrying value based on the relative percentage of each asset to the total \$103M value.

[h] The gain is calculated only for the assets that are actually sold.

[i] Because the fair value of the Class IO and the Class R assets exceeds the amount at which the assets are recorded, an additional entry is needed to write these assets up to fair value. If the assets are held as Trading Assets, the offsetting credit entry will be to Income. If the assets are Available-for-Sale, the credit entry will be to Other Comprehensive Income in the Equity section of the Balance Sheet.

This example shows the following:

- The fair value of the assets actually sold was \$99,800,000, but the allocation of the \$99M carrying value resulted in a basis in these assets of only \$95.9M. After transaction costs of \$1M, the sale of the assets resulted in a gain of almost \$2.9M ($\$99.8\text{M} - \$1\text{M} - \95.9M), which was recorded on the income statement.
- As noted above, it is assumed that management determined the fair value of the servicing asset, the IO interest, and the residual interest as \$700,000, \$1.5M, and \$1.0M, respectively. From the two journal entries, these assets were recorded on the balance sheet, and approximately \$100,000 was recorded to either Other Comprehensive Income or the Income Statement as a fair value adjustment, based on how the company classifies the underlying securities.

In effect, a securitization transaction results in gain reported on the income statement with the offsetting entry to assets on the balance sheet. By merely selling the asset to another related entity, income is generated and asset balances increase. This does not appear economically sound. A portion of the gain or inflated asset balance could be related to incorrect estimates; for example, management may incorrectly value the Mortgage Servicing Rights, the Interest-Only Strips, and the Residual interests for the following reasons:

- The servicing asset reflects services that the securitizer will ultimately perform, such as collecting and processing mortgage loan payments, establishing escrow amounts, and managing loss mitigation. Management often values these rights based on significant subjective underlying assumptions related to the revenue that the firm may ultimately receive for these services, as well as the costs that the securitizer/originator would incur. An asset is recorded only if the estimated benefits to the servicer exceeded the costs. To the extent that these assumptions are incorrect, or if management does not revisit the

assumptions in future periods for validation, the Mortgage Servicing Rights asset would be overstated.

- Similarly, an "interest only strip" or "IO" relates to certain revenue received by the securitizer in excess of the contractually specified servicing fees. For example, the securitizer/originator may retain the difference between interest collected and the actual interest that is paid out to investors (this amount is considered IO). Again, management usually estimates this amount at the time of securitization and therefore, the amount recorded could be subject to significant error if the estimates are incorrect or if the estimates are not periodically reassessed.
- Finally, the estimate of residual interests retained could be incorrect due to the same subjective assumptions used for valuing the servicing asset and the IO Class. Without a traded market for such interests, management generally bases the valuation for these securities on internally derived estimates. The discount rate used to arrive at a value for the residual interest should reflect the fact that these securities inherently hold the most risk and therefore should be considerably higher than the discount rate applied to more senior tranches or the overall mortgage.

Furthermore, the balance sheets of the originators may have also been overstated, as they may not have properly recorded certain liabilities. For example, the originator/securitizer may make certain representations and warranties about the loans that are transferred to provide some further credit risk insurance. If the loans do not meet certain requirements as outlined in the securitization document, the securitizer may be forced to repurchase the loans, which would likely trigger a loss. At the time of the original transfer, the securitizer should record a liability for these repurchase obligations, but similar to the valuation issues above, this liability would be valued based on management estimates.

For loans not securitized but rather held for investment, originators should have recorded the appropriate loan-loss reserves to account for losses that they will incur in the event of default. Given the amount of subprime mortgages, the expected amount of loan loss default should have been significant. However, to the extent that loss estimates were based on historical mortgage performance in the *prime* loan market, the liabilities would have been understated. The FASB Staff Implementation Guidance “Application of FASB Statements 5 and 114 to a Loan Portfolio” states:

“Losses should not be recognized before it is probable that they have been incurred, even though it may be probable based on past experience that losses will be incurred in the future. It is inappropriate to consider possible or expected future trends that may lead to additional losses.”

Consequently, under existing accounting standards, management may not have established sufficient loan-loss reserves at the time of origination.

In effect, the financial statements for originators and securitizers likely reflected overstated net income due to securitization gains; overstated asset balances due to incorrectly estimated MSR, IO interests, and residual interests; and understated liability balances for repurchase obligations and loan loss reserves. Economically, this accounting implies that the value of the various parts when securitized exceeded the value of the original loan. Moreover, if the portion that was securitized was mispriced, or if the value of risk retained by the originating bank was underestimated, then the financial statements would not accurately reflect the underlying economics of the securitization transaction.

Fair Value of Investments in MBSs & CDOs

A variety of different investors purchased MBSs and CDOs. Many banks purchased the securities as investments, and pursuant to FASB Statement 115 *Accounting for Certain Investments in Debt & Equity Securities*, these securities were classified as one of the following:

- **Trading Securities** are bought and held principally for the purpose of selling in the near term. The securities are recorded at fair value, and any change in value for these assets is recorded as gain or loss on the income statement.
- **Available-for-Sale Securities** are bought with the intention of not actively trading, but could be sold if desired. Similar to trading securities, AFS securities are recorded at fair value. A change in value for these securities is recorded as gain or loss to Other Comprehensive Income (OCI) in the Equity section of the balance sheet, but if management deems the change “other than temporary,” the gain or loss is recognized in the income statement.
- **Held-to-Maturity Securities** are bought with the intention of retaining the securities until the maturity date. The securities are recorded at historical cost but are subject to impairment testing. The fair value has to be disclosed in the notes to the financial statements.

Laux and Leuz (2009) find that large bank holding companies reported approximately 36% of their assets at fair value, with an additional 50% of assets (loans and held-to-maturity securities) subject to fair value disclosure notes in the financial statements. These firms determined fair value using the guidelines outlined in FASB 157, with most of the assets considered Level 2 (with observable inputs).

As noted above, the balance sheets for securitizers/originators were likely overstated. Unfortunately, the balance sheets for these investors (bank holding companies and other financial institutions) may have also been overstated due to these investments. First, some of the assets were Level 3 assets that management valued based on internal estimates, which usually reflected historical prices and a consistent upward trend in market performance. Secondly, it is likely that the observable inputs used to value Level 2 assets were also misstated, as the risk related to the subprime MBS and CDOs was not effectively considered or priced.

Overstatement of Regulatory Capital

Because a bank's regulatory capital is often assessed using modified financial statement measures, regulatory capital for the banks was also overstated. With the overstated balance, banks (both investors in the MBS and CDOs, as well as originators) began to take riskier positions because regulatory capital appeared to be sufficient. To be adequately capitalized under federal bank regulatory agency definitions, a bank holding company must have a Tier 1 capital ratio of at least 4%, a combined Tier 1 and Tier 2 capital ratio of at least 8%, and a leverage ratio of at least 4%, and not be subject to a directive, order, or written agreement to meet and maintain specific capital levels. Shareholders' equity, which reflects original capital contributions, income/loss of the bank, and distributions to its shareholders, generally comprises Tier 1 capital. Tier 2 capital generally includes undisclosed reserves, revaluation reserves, and general provisions.¹³ The ratios are calculated by dividing the amount of Tier 1 (or Tier 1 and Tier 2 capital) by the amount of risk-adjusted assets. A risk-adjusted weight takes into account that riskier assets should require more capital to be on hand. Generally, Treasury securities have no risk weight attached, mortgages have 50% weight, and other assets (such as loans to customers) have 100% weight. The example below illustrates how manipulation of the weights could change the required capital.

¹³ Undisclosed reserves reflect profits earned but not through the ordinary course of business; note, however, that these reserves are not always accepted as Tier 1 capital by regulators. Revaluation reserves reflect some increases in the value of the company assets. General provisions reflect expected losses where the exact nature of the loss is unknown.

Calculation of Regulatory Capital

Scenario 1: Mortgages with 50% Risk Weighting

| Assets | | Liabilities | |
|------------------------------------|--------------|-------------|--------------|
| Treasuries | 25 | Debt | 196 |
| Mortgages | 175 | | |
| | | Equity | |
| | | Capital | 4 |
| Total | 200 | | 196 |
| Capital Ratio | | | |
| Total Capital | 4 | | |
| Risk-Weighted Capital | | | |
| Treasuries | 25 | 0% | - |
| Mortgages | 175 | 50% | 87.5 |
| Total Risk-Weighted Capital | | | 87.50 |
| Tier 1 Capital Ratio | 4.57% | | |

Scenario 2: MBS with 100% Risk Weighting

| Assets | | Liabilities | |
|------------------------------------|--------------|-------------|---------------|
| Treasuries | 25 | Debt | 196 |
| Mortgages | 100 | | |
| MBS | 75 | | |
| | | Equity | |
| | | Capital | 4 |
| Total | 125 | | 196 |
| Capital Ratio | | | |
| Total Capital | 4 | | |
| Risk-Weighted Capital | | | |
| Treasuries | 25 | 0% | - |
| Mortgages | 100 | 50% | 50.0 |
| MBS | 75 | 100% | 75.0 |
| Total Risk-Weighted Capital | | | 125.00 |
| Tier 1 Capital Ratio | 3.20% | | |

Scenario 3: MBS with 50% Risk Weighting

| Assets | | Liabilities | |
|------------------------------------|--------------|-------------|--------------|
| Treasuries | 25 | Debt | 196 |
| Mortgages | 100 | | |
| MBS | 75 | | |
| | | Equity | |
| | | Capital | 4 |
| Total | 125 | | 196 |
| Capital Ratio | | | |
| Total Capital | 4 | | |
| Risk-Weighted Capital | | | |
| Treasuries | 25 | 0% | - |
| Mortgages | 100 | 50% | 50.0 |
| MBS | 75 | 50% | 37.5 |
| Total Risk-Weighted Capital | | | 87.50 |
| Tier 1 Capital Ratio | 4.57% | | |

- In Scenario 1, the bank's only risk-adjusted weights relate to mortgages, which are risk-adjusted at 50%. With capital of only \$4, the bank is able to meet the Tier 1 Capital Ratio requirement.
- In Scenario 2, the bank now has two types of risk-adjusted assets – mortgages and MBS. The mortgages are risk-adjusted at 50%, while the MBS are adjusted at 100%. Consequently, with the same capital of \$4 as in Scenario 1, the bank will not meet the Tier 1 Capital ratio requirement of 4%.
- Scenario 3 reflects the same asset profile as Scenario 2, except that the bank has risk-weighted the MBS by only 50%. Management presumably justified this weight due to securitization of the loans, assuming that the tranches were structured so that the senior tranches (with the highest analyst rating) significantly outweighed the junior tranches. Through the securitization process and the reduction of the risk-weighting, the bank is now able to meet its Tier I capital requirements.

Similarly, the aforementioned overstatement of asset values and understatement of liabilities also distorted the Tier 1 capital requirements. For example, Scenarios 4 and 5 below illustrate how the understatement of a loan loss reserve would allow a bank to meet its Tier 1 requirement.

Scenario 4: No Loan Loss Reserve

| Assets | | Liabilities | |
|------------------------------------|------------|--------------------|--------------|
| Treasuries | 25 | Debt | 196 |
| Mortgages | 100 | | |
| MBS | 75 | Equity | |
| | | Capital | 4 |
| Total | 125 | | 196 |
| <hr/> | | | |
| Capital Ratio | | | |
| Total Capital | | | 4 |
| Risk-Weighted Capital | | | |
| Treasuries | 25 | 0% | - |
| Mortgages | 100 | 50% | 50.0 |
| MBS | 75 | 50% | 37.5 |
| Total Risk-Weighted Capital | | | 87.50 |
| Tier 1 Capital Ratio | | | 4.57% |

Scenario 5: Loan Loss Reserve (and Reserve Expense) for \$2

| Assets | | Liabilities | |
|------------------------------------|------------|--------------------|--------------|
| Treasuries | 25 | Debt | 196 |
| Mortgages | 100 | Loan Loss | 2 |
| MBS | 75 | Equity | |
| | | Capital | 2 |
| Total | 125 | | 198 |
| <hr/> | | | |
| Capital Ratio | | | |
| Total Capital | | | 2 |
| Risk-Weighted Capital | | | |
| Treasuries | 25 | 0% | - |
| Mortgages | 100 | 50% | 50.0 |
| MBS | 75 | 50% | 37.5 |
| Total Risk-Weighted Capital | | | 87.50 |
| Tier 1 Capital Ratio | | | 2.29% |

Management Incentives

Senior management, whose compensation is often linked to income, had little incentive (i) to limit the amount of subprime mortgage lending and securitization that the originators engaged in or (ii) to scrutinize the corresponding gains from fair value adjustments that were recorded to increase income – especially since the regulatory capital ratios were maintained. In effect, the securitization process *with the accompanying accounting benefits* provided a large incentive to senior management of originators to maximize the number of mortgages issued and sold to third parties. As noted above, the spreading of risk through the securitization process itself was not inappropriate, but the firms’ ability to book profits early and overstate assets using the *accounting* rules for securitization facilitated the misstatements that then overstated the benchmarks on which compensation was based. Furthermore, these benefits also inhibited senior management’s motivation to scrutinize securities that their firms purchased or the valuation attached to such securities.

One example of poor management related to sub-prime lending is Angelo Mozilo, the former CEO of Countrywide Financial. During Congressional hearings following the collapse of Countrywide in 2010, Mozilo stated that he was originally skeptical of subprime loaning practices in the 1990s:

“When I first brought the loans [for less credit-worthy individuals] into the office, they said: ‘You’re nuts, you’re crazy, don’t do this. There’s a reason why we’re rejecting these people.’” (Protest, 2011)

However, over the next decade, the company began to grant a growing number of subprime mortgages in order to compete with other lenders. Mozilo justified the practices under the belief that “Countrywide was helping to break down the racial and economic barriers to homeownership” (Protest, 2011). Mozilo benefited from the financial success and increasing market value of the stock of his company; in the five years prior to the start of the financial crisis, he made approximately \$470M in compensation, of which \$92M was paid in cash, and \$378M was received through exercise of executive stock options (Maremont, 2008). Mozilo acknowledged the riskiness of the lending in a 2006 email released by the SEC in 2009 in which he noted that “In all my years in the business, I have never seen a more toxic product.” Despite this acknowledgement, Countrywide continued to engage in sub-prime lending, and Mozilo profited from the rising stock price.

Following the collapse of Countrywide, Mozilo was investigated by the SEC and ultimately fined. On October 15, 2010, Mozilo agreed to pay \$67.5M in part to “settle charges that he and other Countrywide executives misled investors as the subprime mortgage crisis emerged.” The amount was the largest penalty ever paid by a public company’s senior executive in an SEC settlement. Robert Khuzami, the Director of the SEC Enforcement Division, was quoted as saying, “Mozilo’s record penalty is the fitting outcome for a corporate executive who deliberately disregarded his duties to investors by concealing what he saw from inside the executive suite — a looming disaster in which Countrywide was buckling under the weight of increasing risky mortgage underwriting, mounting defaults and delinquencies, and a deteriorating business model” (U.S. Securities and Exchange Commission, 2010).

Summary of Contributing Factors to the Financial Crisis

Presumably, auditors of the banks, bank regulators, and third party institutions should have challenged the estimates used to calculate the gain on securitization, forced the parties to revisit their fair value assumptions, or re-assess the risk-adjusted weights for some MBS. Unfortunately, some auditors involved in assessing the revenue from loan originations turned a blind eye to false information in loan applications and helped to compromise lending standards in assessing the risk of the loans. Others did not properly evaluate the estimates that management used to value the assets and liabilities. Litigation related to poor auditing of the lending process, as well as other financial transactions during the financial crisis, is now commencing (McCool, 2010).¹⁴

In summary, the period from late 2001 through early 2008 was one of considerable economic prosperity for the United States, but a significant contributor to that prosperity was wealth (or economic activity) generated through poor lending practices and loose regulatory oversight. Many Americans purchased homes that they simply could not afford, and accounting standards enabled financial institutions to record inflated revenues related to these home loans without recourse from auditors and analysts. Furthermore, lax lending and the securitization process become popular in many other countries that were also enjoying strong economic conditions. Ultimately, the subprime mortgage crisis became a global issue, either directly because of poor lending practices in countries such as England, Ireland, and Spain, or because of unsustainable growth in countries such as India and China.

IV. The Onset of the Financial Crisis and Consequences

¹⁴ The transaction cited in this article related to Lehman Brothers and Ernst & Young is not directly related to mortgage lending but is an example of a financial transaction that occurred but perhaps was not appropriately accounted for.

The robust economic growth signaled that low interest rates were no longer necessary; the Federal Reserve Board began to increase interest rates from the low 4% prime rates of 2002-2004 to over 5% in early 2005, increasing up to 8.25% in 2007. These increases were predictable, given the upward sloping yield curve at the time. As rates increased, subprime homeowners with adjustable rate mortgages began to default on their loans -- these individuals were simply unable to make their monthly payments that had, in some cases, doubled or tripled. In states such as California, Florida, and Nevada where lending had been particularly reckless, a significant number of home foreclosures began to depress neighborhood housing prices. Banks started to suffer catastrophic losses related to mortgages and loan defaults. Ryan (2008) cites the 2007 announcement by New Century Financial, the second largest subprime mortgage originator in the US in 2006, to restate its financial statements for the first three quarters of 2006 as the start of the first wave of the Great Recession. The restatement related to inadequate allowances for repurchase obligations. Specifically, the company had i) under-reserved for “early payment defaults” in which homeowners defaulted in their first month after loan origination and ii) underestimated the losses incurred upon disposing of loans that the company had repurchased under its contractual obligations, among other matters. Shortly thereafter, the company declared bankruptcy, and other subprime mortgage brokers ceased originating new loans and began to lay off significant numbers of their workforce.

The crisis soon spread to investors in MBS and CDOs. For example, two Bear Stearns’ hedge funds with significant junior CDO positions received a large capital infusion from the parent bank in June 2007 to maintain solvency, but the move was ineffective given the magnitude of the CDO positions and the related losses. For the next few months, investors with similar junior subprime positions experienced massive losses, and large bank-holding companies began to announce huge write-downs related to subprime positions – even for those securities related to the most senior tranches. Ryan (2008) notes that Merrill Lynch announced a \$4.5B loss on subprime positions in its 10/5/2007 filing, which was later revised up to \$7.9B. Citigroup

reported a \$1.8B loss on its positions in its 11/5/2007 filing. At the same time, other significant events related to the capital markets occurred: bond insurance losses on guarantees of subprime CDOs, the buy-out of Bear Stearns by JPMorgan Chase, the failure of Lehman Brothers, and ultimately the Troubled Asset Relief Program (TARP), which President Bush enacted on October 3, 2008.

The crisis in the financial sector had tremendous follow-on effects. Demand for new construction vanished, as did demand for realtors, mortgage brokers, and banking services. The market (using the Dow Jones Industrial as a benchmark) dropped precipitously from over 14,000 in October 2007 to under 7,000 in March 2009, with a drop of almost 2,000 points in one week alone in late September 2008. Fearing a recession, Americans began to consume less. Companies started laying off workers in large numbers, which further reduced consumption. Job losses began to mount as almost every industry was affected; the US experienced the most dramatic rise in unemployment from 4.6% in 2007 to 9.3% in 2009 (Bureau of Labor Statistics). The ripple effects of the US recession were devastating throughout the world. Some postulate that perhaps the three-prong strategy implemented in the early 2000s to stimulate the US economy may have actually gone too far in its attempt to avoid an earlier recession. Interestingly, some of those early policies (such as low taxes and low interest rates) have been implemented again to assist with the US recovery. Thus, the question is not whether those policies are effective, but the extent that they should be used and the possibility that, in an effort to make credit more available and to bolster the economy during a downturn, another potentially larger problem could be created.

V. The Contribution of Accounting to the Financial Crisis

As discussed above, the securitization process and the associated benefits from the accounting for such transactions resulted in overstated assets and liabilities on the balance sheets of

subprime lenders. When homeowners began to default on their mortgages, the assets held on the balance sheets of these lenders disappeared, and the banks did not have sufficient capital to cover the losses. In the original Scenario 1 (reprinted below), the mortgages were deemed to be 50% risk-adjusted for weighting purposes, and the bank barely met the Tier I capital requirements. However, in the event of defaults, the mortgages would no longer be considered a sufficient asset, and the bank would effectively become insolvent with significant negative capital (Scenario 6).

Scenario 1: Mortgages with 50% Risk Weighting

| Assets | | Liabilities | |
|------------------------------------|------------|--------------------|------------|
| Treasuries | 25 | Debt | 196 |
| Mortgages | 175 | | |
| | | Equity | |
| | | Capital | 4 |
| Total | 200 | | 196 |
| Capital Ratio | | | |
| Total Capital | | 4 | |
| Risk-Weighted Capital | | | |
| Treasuries | 25 | 0% | - |
| Mortgages | 175 | 50% | 87.5 |
| Total Risk-Weighted Capital | | 87.50 | |
| Tier 1 Capital Ratio | | 4.57% | |

Scenario 6: Defaulted Mortgages

| Assets | | Liabilities | |
|------------------------------------|-----------|--------------------|------------|
| Treasuries | 25 | Debt | 196 |
| Mortgages | - | | |
| | | Equity | |
| | | Capital | -171 |
| Total | 25 | | 196 |
| Capital Ratio | | | |
| Total Capital | | -171 | |
| Risk-Weighted Capital | | | |
| Treasuries | 25 | 0% | - |
| Mortgages | 175 | 50% | 87.5 |
| Total Risk-Weighted Capital | | 87.50 | |
| Tier 1 Capital Ratio | | -195.43% | |

A further example is the acquisition of Countrywide, a giant mortgage lender, by Bank of America, in 2008. Upon acquisition, Bank of America was required to record Countrywide's loans at fair value, which effectively eliminated all equity in Countrywide (The Economist, 2008).

For the bank holding companies that had invested in MBS and CDOs, FAS 157 required an adjustment to the income statement and equity as the securities began to lose value. For example, as the observable inputs for Level 2 assets declined in value, the banks were forced to write down the Trading Securities, as well as the Available-for-Sale securities, actions that directly affected the income statement and the equity section of the balance sheets. Many banks that had not been originators of subprime mortgages but rather investors in the MBS and CDOs

also experienced a significant decrease in their capital balances and were forced to sell assets in order to meet the Tier 1 and Tier 2 regulatory requirements. Many referred to the contagion effects on the banks as procyclicality: the greater the declines in value, the more necessary it was for banks to dispose of the assets in fire sales to attempt to preserve some capital. However, by disposing of assets at significantly reduced prices, fair value benchmarks decreased even more, prompting another round of fire sales. Many banks began using Level 3 management assumptions to attempt to value their assets, rather than rely on market prices which clearly did not reflect “orderly” transactions, as mandated in FAS 157.

Did Fair Value Accounting Contribute to the Crisis?

Much debate has focused on this issue. At an SEC panel on fair value accounting in October 2008, William Isaac, the former FDIC Chairman from 1978-1985, is quoted as saying, “I gotta tell you that I can’t come up with any other answer than that the accounting system is destroying too much capital, and therefore diminishing bank lending capacity by some \$5 trillion. It’s due to the accounting system, and I can’t come up with any other explanation” (Katz, 2008).

Opponents of this perspective stated that the crisis was the consequence of the failure of many - lax risk management policies, negligent regulators, inattentive analysts, uninformed borrowers, and predatory lenders.¹⁵ These opponents also cite the fact that fair value accounting, *if implemented “fairly,”* actually provided more clear and timely information to investors about the financial health of banks once the financial crisis started; in this context, it is difficult to believe

¹⁵ Professor Ray Ball of the University of Chicago was quoted at the same SEC panel as Isaac as saying, “I think it would be a terrible shame if we shoot the messenger and ignore the message” that fair value accounting conveys about the current condition of the banks. Laux and Leuz (2009) find that the evidence of the impact of fair value changes on bank income and regulatory capital was limited. The SEC’s 2008 *Report and Recommendations Pursuant to Section 133 of the Emergency Economic Stabilization Act of 2008: Study on Mark-to-Market Accounting* concludes that “fair value accounting did not appear to play a meaningful role in bank failures occurring during 2008. Rather, bank failures in the US appeared to be the result of growing probable credit losses, concerns about asset quality, and in certain cases, eroding lender and investor confidence. For the failed banks that did recognize sizable fair value losses, it does not appear that the reporting of these losses was the reason the bank failed.”

that historical cost accounting would have been more insightful or relevant to evaluate the extent of the banks' subprime woes. It is such matter of implementation that we identify as the key issue here.

The actual fair value standards may not have been the accounting culprit behind the financial crisis; accounting rules have always reflected some tension between the existing standards, which are written to capture past performance, and the market's demand for valuation indicators, and fair value accounting is an example of a bridge between these two demands. However, the inconsistent *implementation* and *subsequent misapplication* of the standards by originators, securitizers, and investors were contributors to the crisis.

- First, when lending was reckless, reporting of immediate gains on securitization facilitated and incentivized more subprime lending. If the fair value standards had been correctly implemented in the first place, the gains on securitization should have been minimal, and the appropriate amount of loan loss reserves and repurchase obligations would have been recorded on balance sheets to reduce overstated asset amounts. Because the financial statements would not have reported inflated earnings or asset balances, many of the management incentives that perpetuated the risk-taking behind subprime lending and securitization would have likely been attenuated.
- Second, because of the poor implementation of fair value standards, Level 1 and Level 2 benchmarks used by financial institutions were incorrect. When individuals began to default on loans, firms switched to using Level 3 fair value estimates rather than adjust Level 1 or 2 benchmarks. The ability of firms to change to the use of internal management estimates for valuation purposes further enabled firms to continue to assume risk. Furthermore, the misapplication of fair value at this time also likely postponed the necessary regulatory intervention. In effect, by not updating the Level 1 and Level 2

valuations and applying accounting conservatism quickly enough, the financial crisis worsened.

- Finally, the unavoidable and eventual recognition of losses under the Tier 1 and Tier 2 fair value standards likely perpetuated the fire sales and the decrease in the amount and value of banks' capital, as institutions rushed to revalue and sell assets to meet regulatory requirements. The poor implementation followed by late application of the standards exacerbated the effects of the crisis.

Factors such as reckless lending and lack of regulatory oversight were certainly significant reasons for the recession, but it is clear that the poor implementation of fair value accounting standards have been a factor in *causing* and *prolonging* the Great Recession. In effect, the fact that firms did not correctly or accurately apply the fair value standards *at the time of issuance* of sub-prime mortgages and *at the time of securitization* created inappropriate incentives for management to continue these practices.

With the ability to record gains on securitization, management benefitted from higher reported earnings and increasing stock prices, which in turn increased their cash and equity compensation. Once fair value was implemented poorly, these incentives prolonged the risk-taking activity, and the late application of fair value likely led to the aforementioned contagion effects that made matters even worse. At the time that fair value was actually applied, the extent of the distress within the financial institutions resulted in a “too big to fail” mentality that forced government intervention. If only the fair value standards had been implemented correctly in the first place, then some of the effects of the crisis would have likely been averted.

VI. Conclusions and Lessons Learned

In summary, many factors caused the financial crisis, and it is likely that the poor implementation and application of fair value accounting rules also had some contribution. These

standards should be reconsidered, with less emphasis on accounting rules that anticipate future income and that overstate income and assets, and greater emphasis on ensuring appropriate implementation and on standards that require bad news to be recognized when it becomes known. This timely recognition of losses would provide greater transparency to investors about the actual performance of their investments. While standards should allow for innovation and growth, the accounting for firm performance must reflect an accurate portrayal of the historical financial performance and health of a company, with comments related to fair value included only in footnotes or other sections of the financial statements. Other suggestions for revisions to the standards include forcing banks to increase actual capital requirements in strong economic times to build equity reserves in the event of a subsequent downturn, and separating credit losses from other changes in fair value on the financial statements.

Such objectives can be obtained through appropriate standards that are accompanied by greater enforcement, sound auditing practices, and commensurate regulatory vigilance. Consideration should be given to these matters, particularly as standards will likely continue to evolve in light of future convergence with IFRS.

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