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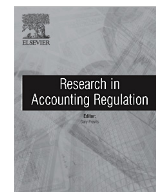

# Adjustment of valuation inputs and its effect on value relevance of fair value measurement ☆

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ABSTRACT

The fair value accounting standards; i.e., FAS 157, FAS 157-3 and FAS 157-4, specify the circumstances where firms need to adjust valuation inputs to fair value measurements in response to changes in market conditions. Such an adjustment inherently involves substantial management judgment and is accompanied with transfers of assets and liabilities among the different levels of the fair value hierarchy. We study the effect of adjusting valuation inputs to reflect market variations on value relevance of fair value measurements by comparing the value relevance of fair value assets between the banks that make transfers of assets and the banks that make no transfers. Overall, we find a significant increase in value relevance of fair value measurements for banks that transferred assets into/out of the Level 3 category. Our study examines a challenging situation in the application of fair value standards; i.e., determining fair value when there is a change in market conditions. Fair value measurement under such a situation involves substantial management judgment and potential estimate errors and manipulation. Our findings provide useful information for researchers, regulators and accounting professionals to assess the market's perception of the reliability of fair value information when management exercises substantial discretion in adjusting valuation inputs under changing market conditions.

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## 1. Introduction

To increase the consistency and comparability of fair value measurements, Financial Accounting Standards 157 (FAS 157), *fair value measurements,* provides a single definition of fair value as the price that would be received when selling an asset or paid to transfer a liability in an *orderly transaction* between market participants at the measurement date.[1] It also stipulates the fair value hierarchy, which requires companies to maximize the use of observable inputs (i.e., Level 1 and Level 2 inputs that are quoted prices in an active market), when available, and to minimize the use of unobservable inputs (i.e., Level 3 inputs that are based on valuation models and companies' own estimates) in determining fair value (FASB, 2006).[2] Since market-based inputs are both more verifiable and more reliable indicators of market participants' assumptions than unobservable inputs, there had not been much controversy over the appropriate use of observable inputs vs. unobservable inputs in fair value measurement until the financial crisis in 2008.

☆ *Data availability:* All data are available from public sources.

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[1] As stated in FAS 157, an orderly transaction is a transaction that assumes exposure to the market for a period prior to the measurement date to allow for marketing activities that are usual and customary for transactions involving such assets or liabilities; it is not a forced transaction (for example, a forced liquidation or distress sale).

[2] FAS 157 allows companies to measure fair value using unobservable inputs, such as discounted cash flow models, to the extent observable inputs are not available. However, it reiterates that in all cases, fair value measurement shall reflect an exit price from the perspective of market participants who hold the assets and the unobservable inputs developed by the companies should reflect information about the market participants' assumptions on the assets price that is reasonably available.

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In the recent financial crisis, the rapid decline in asset value and uncertainties about the severity of underlying risk made market participants pull away and caused illiquidity in otherwise liquid markets. Companies faced a challenge in determining the appropriate inputs for fair value measurement in such a volatile market. They contended that quoted prices from a depressed market do not represent a good measure of fair value and securities shall be valued based on their underlying cash flow. However, investors and regulators remained doubtful about the reliability of fair value measurement using unobservable inputs.[3] In the early stages of the financial crisis, the SEC insisted on companies using "observable inputs, even when the market is less liquid than historical market volumes, unless those prices are the result of a forced liquidation or distress sale" to estimate fair value (SEC, 2008a). Auditors also took a cautious approach by following FAS 157 to limit the use of Level 3 unobservable inputs in fair value measurements due to potential litigation exposure (Yanez, 2008). Subsequently, amid the outcry from the financial institutions for regulatory forbearance[4], the FASB issued the FASB Staff Position (FSP) on Financial Accounting Standards (FAS) 157-3 in October 2008 (FASB, 2008) and FSP FAS 157-4 in April 2009 (FASB, 2009) to provide further guidance for determining fair value in accordance with FAS 157 when the markets are not active and to clarify the criteria on determining when the market becomes inactive or illiquid and whether a transaction is not orderly.

Following FAS 157 and the additional guidance, as the market for asset classes changes from active to inactive or recovers from illiquidity, companies should adjust the mixture of observable and unobservable inputs to fair value measurement accordingly. The adjustment of valuation inputs could generate more reliable fair value measurement if the selected inputs more closely correspond to variations in market conditions. On the other hand, such adjustments make the process of fair value determination exposed to more risk of estimate errors and management manipulations. As markets for asset classes moved from active to inactive, there were fewer transactions in the market and more transactions were likely to not be orderly. However, the fair value standards caution that even in an inactive market it is not appropriate to assume that all market transactions are necessarily not orderly and can be excluded from consideration. In addition, unobservable inputs by their nature involve significant management judgments and discretion. Since valuation inputs largely affect the reliability of the resulting fair value measurement, it is important to investigate how investors perceive the effect of the adjustment of valuation inputs on the reliability of fair value measurement, particularly when the determination process involves substantial management judgment and accounting discretion.

Our study attempts to examine the impact of adjusting valuation inputs in response to market variations on the reliability of fair value measurement. Specifically, we identify banks that adjust their valuation inputs through transfers of assets and liabilities into/out of the Level 3 category in the fair value hierarchy and compare the value relevance of those banks' fair value assets with that of banks that make no transfers. Following the fair value accounting standards, when markets are inactive and transactions are not orderly, companies should weigh less or not use quoted market prices in estimating fair value and use more unobservable inputs. When significant unobservable market inputs are used for fair value measures, assets and liabilities classes should be transferred from the Level 1 and Level 2 categories into the Level 3 category. In contrast, when market conditions return to normal and relevant observable market inputs become available for items in the Level 3 category, companies need to use observable inputs in fair value measurement and transfer the items out of the Level 3 category into the Level 1 or Level 2 categories. The adjustments of valuation inputs in the form of transfers should make the resulting fair value measurements more closely reflect market conditions. Once perceived by investors, the adjustments would be reflected in the value relevance of the fair value measurements.

FAS 157 requires companies to reconcile balances of their Level 3 assets and liabilities and make disclosure on transfers of assets and liabilities into and/or out of the Level 3 category in their financial reports. By identifying banks that made transfers of assets into and/or out of the Level 3 category from their SEC filings, we investigate whether banks with such transfers have an increase in value relevance of their fair value assets relative to banks without transfers.[5] We also compare the effect of transfers on value relevance in the pre-guidance and the post-guidance periods to examine the effect of FAS 157-3 and FAS 157-4.

Using a sample of 2524 quarterly observations in the banking industry in 2008 and 2009, we document increased value relevance in all three levels of fair value assets for the banks that make transfers of assets from Level 1 or Level 2 into and/or out of Level 3 compared with banks that do not make such transfers. Level 3 assets show the highest increase in value relevance for banks making transfers in comparison with banks making no transfers, followed by Level 1 assets.

To ensure the documented increase in value relevance is not driven by variations in bank characteristics among the transfer and non-transfer banks, we conduct additional tests to examine the effect of bank size and the amount of fair value assets and liabilities on the value relevance of fair value measurements. We find that bank size does not have consistent associations with value relevance. Similarly, the amount of fair value assets has a mixed

[3] Dorminey and Apostolou (2012) document substantial investor confusion over the income effects of fair value recognition of hedging derivatives in the bank industry.

[4] Financial institutions alleged that fair value accounting forced them to record huge asset write-downs on the basis of market conditions that were inactive and transactions that were not orderly (Wallison (2008a, 2008b)), although recent research (e.g., Badertscher, Burks, & Easton 2012) find evidence that fair value accounting has minimal effect on commercial banks' regulatory capital and did not lead to increased sales of securities during the crisis.

[5] We focus our study on fair value assets because the majority of the items carried at fair value are assets and there are very few transfers of liabilities into and out of the Level 3 category. The impact of the fair value guidance on the value relevance of fair value liabilities should be rather minor.

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