Fair Value Accounting for Financial Instruments: Some Implications for Bank Regulation

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- Introduction

- Background of Fair Value Accounting in Standard Setting

- Are Fair Values Useful to Investors? Evidence from research

- Marking-to-Market Implementation Issues

- Marking-to-Market: Additional Issues for Bank Regulators

- Concluding Remarks

- Accounting standard setters in many jurisdictions have issued standards mandating recognition of balance sheet amounts at fair value, and changes in their fair values in income
  - E.g.,, FASB (US), fair value standards for investment securities and derivatives
  - Other balance sheet amounts subject to partial application of fair value rules (impairment and whether derivative is used to hedge changes in fair value).
- FASB and IASB working on joint projects examining feasibility of mandating fair value recognition of most financial assets and liabilities

- Fair value recognition enjoys support of SEC
  - SEC Report (2005) identifies two primary benefits
    - Mitigate use of accounting-motivated transaction structures created by mixed attribute model.
      - E.g., eliminate incentive to use asset securitizations to get gain on sale accounting
    - Reduce reporting complexity
      - E.g., hedge accounting model for derivatives would disappear--could also lower record-keeping costs
  - But there are costs as well
    - Recognized financial instrument fair value estimates may be unreliable
    - Worse yet, absent active markets for the instruments, fair values must be estimated by management, and can be subject to discretion or manipulation

- Purpose of the paper is to provide some insights for assessing costs and benefits of using fair value recognition for bank regulation.
    - Review capital market studies of fair value accounting to help gain insights
    - Discuss implementation issues
        - Insights from capital market studies
    - Discuss implementation issues of particular relevance to bank regulators

- Fair Value Definition
  - "…the price at which an asset or liability could be exchanged in a current transaction between knowledgeable, unrelated willing parties" (FASB, 2004)
  - Objective is to estimate exchange price
    - Implicit in this objective is that exchange price fully captures an instrument's value
      - Value-in-use to the entity holding the instrument is irrelevant
      - Implication of this is that the value of a swap derivative to a bank does not depend on the existing assets and liabilities on its balance sheet
      - A pretty strong assumption!

- Applications to standard setting
  - US (FASB)

    Disclosure
    - SFAS 107: *Disclosures about fair value of financial instruments*
    - SFAS 119: *Disclosure about derivative financial instruments and fair value of financial instruments*

    Recognition
    - SFAS 115: *Accounting for certain investments in debt and equity securities*
    - SFAS No. 123 (Revised): *Share-based payments*
    - No. 133: *Accounting for derivative instruments and hedging activities*

- Applications to standard setting
  - EU (IASB)
    - IAS 32: *Financial Instruments: Disclosure and Presentation*
      - Similar to SFAS 107 and SFAS 119
    - IAS 39: *Disclosure about derivative financial instruments and fair value of financial instruments*
      - *Scope encompasses investment securities and derivatives, similar to SFAS 115 and 133*
    - *IFRS2: Accounting for share-based payment*
      - *Similar to SFAS 123 (Revised)*
    - *IFRS7: Financial Instruments: Disclosures*

- ## Valuation Techniques
  - FASB ED: Fair Value Measurements (2004) describes hierarchy of preferences for measurement of fair value
    - Level 1: quoted prices for identical assets and liabilities
    - Level 2: quoted prices for similar assets and liabilities
    - Level 3: company-based estimates
      - Firms should use market prices as model inputs wherever possible (e.g., equity prices for inputs to B-S model to estimate employee stock options fair values)

- Policy question typically addressed is whether recognized or disclosed accounting amount is <u>relevant</u> to investors and measured with sufficient <u>reliability</u> to be incrementally informative to investors

- Policy question is often operationalized using value relevance regressions, testing for incremental association of accounting amount under study in explaining cross-sectional variation in equity share prices

- Example: Landsman (1986) pension study:

$$MVE = a_0 + a_1 MVA + a_2 MVL + a_3 PA + a_4 PL$$

- ## US-based Research
  - ## Investment Securities
    - ### Barth (1994) -- pre-SFAS 115
      - Investment securities' fair values are incrementally associated with bank share prices after controlling for investment securities' book values
      - But, mixed results for whether unrecognized securities' gains and losses provide incremental explanatory power relative to other components of income
        - » Could be a lack of reliability of fair estimates or omitted variable bias (fair value changes of other balance sheet amounts).

- ## US-based Research
  - ## Investment Securities
    - ## Barth, Landsman, and Wahlen (1995) – pre-SFAS 115
      - Lends support to the measurement error explanation by showing that fair value-based measures of net income are more volatile than historical cost-based measures
      - However, incremental volatility not reflected in bank share prices
      - Banks violate regulatory capital requirements more frequently under fair value than historical cost accounting and fair value reg capital violations incrementally predict future historical cost violations

- **US-based Research**
  - SFAS 107
    - disclosed investment securities, loans, deposits, long term debt fair value estimates
    - Barth, Beaver and Landsman (1996), Eccher, Ramesh, and Thiagarajan (1996), and Nelson (1996)
    - Focusing on BBL, basic model is:

$$MVE\text{-}BVE = a_0 + a_1 (FV\_ISEC - BV\_ISEC) +$$
$$a_2 (FV\_LOANS - BV\_LOANS) +$$
$$a_3 (FV\_DEP - BV\_DEP) +$$
$$a_4 (FV\_LTDT - BV\_LTDT) + e$$

- # US-based Research
  - ## SFAS 107
    - ### BBL (1996) finds
      - – I SEC and LOANS fair values incrementally informative to their book values
        - » Loans fair value capture dimensions of default and interest rate risk
      - – Investors discount loans fair value estimates made by less financially healthy banks (those with relatively low regulatory capital)
        - » Consistent with investors seeing through attempts by managers of less healthy banks to exercise discretion when estimating loans fair values

- International Research
  - UK and Australian GAAP asset revaluations
    - Studies focusing on tangible assets include Easton et al. (1993), Barth and Clinch (1996, 1998), Peasnell and Lin (2000)
    - Aboody, Barth, and Kasznik (1999) finds that revalued investments for financial firms as well as non-financial firms are consistently significantly associated with share prices
    - Bernard, Merton and Palepu (1995) focus on mark-to-market accounting effect on regulatory capital for Danish banks
      - Evidence of earnings management, but no reliable evidence mark-to-market numbers are managed to avoid regulatory capital constraint
      - Mark-to-market numbers yield more reliable estimates of equity market values than for US banks -- indirect evidence that fair values could be useful to US investors and depositors

- ## ESO Research
  - Several studies provide evidence of value relevance of ESO disclosures, including Bell, Landsman, Miller, and Yeh (2002), Aboody, Barth, and Kasznik (2004), and Landsman, Peasnell, Pope, and Yeh (2005).
  - Landsman, Peasnell, Pope, and Yeh (2005) provides theoretical and empirical support for measuring the fair value of ESO grants beyond grant date, with changes in fair value recognized in income along with amortization of grant date fair value
  - Aboody, Barth, and Kasznik (2005) finds firms select model inputs so as to manage the *pro forma* income number disclosed in the employee stock option footnote
    - Suggests managers facing incentives to manage earnings are likely to do so when fair values must be estimated using entity-supplied estimates of values or model inputs if quoted prices for assets or liabilities are not readily available

- Easy to mark-to-market financial instruments if actively traded in liquid markets. Issue is complicated if

  - active markets for financial instrument do not exist
  - financial instrument has embedded options, values for which depend on inter-related default and price risk characteristics

- Fair value is not well defined in the absence of liquid markets, as an instrument's acquisition price, selling price, and value-in-use to the entity can differ from each other

- Fair Values Estimates when market prices unavailable – Barth, Landsman, and Rendleman (1998, 2000)
  - BLR uses binomial option pricing model to estimate fair value of corporate debt and its components, conversion, call, put, and sinking fund features
  - The study provides evidence on relevance and reliability of estimated fair values
  - Sample: 120 publicly traded US firms in 1990 with corporate debt with embedded option features
  - Model only considers default risk (not interest rate risk), but does include interest rate information in the yield curve

- Fair Values Estimates when market prices unavailable – Barth, Landsman, and Rendleman (1998, 2000)
  - Findings -relevance:
    - Component value estimates large fractions of total bond fair value
    - Implementation of "fundamental components" approach in which calls classified as assets, conversion options as equity, and puts as debt indicates material changes to recognized balance sheet amounts and debt-equity ratios
    - Component fair value estimates are interdependent, esp. call and conversion features – order of estimation matters – this is important if separate recognition of components is mandated

- Fair Values Estimates when market prices unavailable – Barth, Landsman, and Rendleman (1998, 2000)

  - Findings - reliability:

    - Bond value estimates differ significantly for bond subsample for which bond prices are not available when bonds with market values are excluded from the estimation procedure

      - This suggests financial instruments' fair value estimates are sensitive to whether market price information from other instruments an entity has on its balance sheet is available to be used as model inputs

- Fair Values Estimates when market prices unavailable – Barth, Landsman, and Rendleman (1998, 2000)
  - Conclusions:
    - Authors had to make several educated guesses for model inputs (e.g., equity volatility and conversion schedules). Managers have better information, hence, estimates should improve if firms required to disclose estimates of model inputs
    - Models too complex and difficult to implement if all dimensions of risk and value are considered
      - E.g., simultaneous consideration of interest rate risk and default, and interdependence of bond values (which is a value in use notion)

- **Manipulation of Model Inputs**
  - Relying on managers' model estimates of financial instruments' fair values introduces informational asymmetry problems—adverse selection and moral hazard
    - Adverse selection
      - Market cannot distinguish "high" and "low" quality firms. E.g., two banks whose loan portfolios are of different quality will be valued similarly by the securities market if credible information regarding loans' quality is unavailable
      - Solution: Signaling – permit managers to disclose attributes about loans' fair values that would be too costly for bank managers with low quality loans to disclose

- ## Manipulation of Model Inputs
  - Relying on managers' model estimates of financial instruments' fair values introduces informational asymmetry problems—adverse selection and moral hazard
    - Moral hazard
      - Managers will tend to use private information to their advantage by manipulating information they disclose to securities markets and regulators. In case of banks, can lead to mispricing and inaccurate portrayal of capital ratios
        - » Evidence that managers cannot resist this temptation even in the case of model inputs relating to unrecognized ESO expense (ABK, 2005)
        - » BLR's conclusion managers can provide better estimates of model fair values and model inputs assumes managers will not manipulate the information

- **Manipulation of Model Inputs**
  - Relying on managers' model estimates of financial instruments' fair values introduces informational asymmetry problems—adverse selection and moral hazard
    - If fair value accounting for financial instruments is generally applied for financial statement recognition and regulatory capital determination, accounting standard setters and securities and bank regulators must determine how to balance the benefit of permitting managers to reveal private information (mitigating adverse selection problem) and the cost of managerial manipulation of earnings, capital ratios when selecting model inputs (moral hazard cost)

- Fair Values measurement error
  - Fair value estimates of bank assets and liabilities are likely to contain measurement error
    - Barth, Landsman, and Wahlen (1995) findings for investment securities suggest that if their findings generalize to implementation of a full fair value model, then unrecognized gains/losses could cause earnings and regulatory capital to be more volatile than under historical cost (or mixed attribute) model
      - This would occur if measurement errors in bank assets' fair values not fully offset bank liabilities' fair values

- Fair Values measurement error
  - But not all extra earnings or regulatory capital volatility is "bad"
    - Barth (2004) observes three primary sources of "extra" volatility from fair values:
      - True underlying economic volatility that is reflected by bank assets' and liabilities' fair value changes -- this is "good" volatility
      - Volatility arising from measurement error in estimates of fair value changes – this is "bad" volatility
      - Volatility arising from application of a mixed attribute model –this should be less of a concern if most financial instruments are recognized at fair value

- Fair Values measurement error
  - But not all extra earnings or regulatory capital volatility is "bad"
    - Regulators need to address how best to minimize the ratio of the bad-to-good volatility
  - But, book values contain measurement relative to true economic values too – so appropriate question is whether regulation of bank capital will be more efficient under one fair value or current mixed attribute model

- Economic Considerations
  - What will be the real economic consequences of requiring banks to use mark-to-marketing?
    - Desired outcome is greater economic and informational efficiency
    - Extent to which these outcomes are achieved depends on how the mark-to-market model is implemented ("the devil is in the details")

- ## Economic Considerations
  - What will be the real economic consequences of requiring banks to use mark-to-marketing?
    - One key implementation issue is whether real economic decisions by bank managers will improve
      - Possible reduction in accounting-motivated transaction structures designed to exploit opportunities for income management arising from the current mixed attribute accounting model
      - Extra volatility of fair value income and regulatory capital could cause bank managers to choose lower risk investments than would be the case if investment decisions based solely on economic considerations

- Economic Considerations
  - What will be the real economic consequences of requiring banks to use mark-to-marketing?
    - Economic and informational efficiency effects likely to vary considerably across countries, reflecting differences in
      - Richness of securities markets
      - Legal systems
      - Bank and securities markets regulatory enforcement

- Economic Considerations
  - What will be the real economic consequences of requiring banks to use mark-to-marketing?
    - Law and Finance literature suggests these differences are likely to play an important role in determining effectiveness of using fair value accounting for financial reporting and bank regulation
      - » Recent paper by Caprio, Laeven, and Levine ("Governance and Bank Valuation") suggests that differences in shareholder protection laws and supervisory/regulatory policies across countries have significant effects on bank valuations.

- I identify issues that bank regulators need to consider if they employ fair value accounting for determining regulatory capital and regulatory decisions
- FASB and IASB seem to be moving toward mandating fair value accounting for financial instrument recognition
- Capital markets studies highlight several potential costs/benefits

- Key issues:
  - Regulators need to determine how to let managers reveal private information in fair value estimates while minimizing strategic behavior
  - Regulators need consider how to minimize measurement error to maximize usefulness to investors and creditors making investment decisions, while ensuring that bank managers have incentives to select those investments that maximize economic efficiency of the banking system
  - Cross-country institutional differences are likely to play an important role in effectiveness of using fair value accounting for financial reporting and bank regulation