

1 Value Relevance of Reported Earnings under Conservative 2 Accounting Versus under Mark to Market Accounting

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6 **Abstract**

7 This paper compares the value relevance of earnings under two different accounting methods
8 (namely, conservative accounting and mark to market accounting) in a competitive security
9 market. It proves that the reported earnings are value relevant under both types of accounting
10 methods. Furthermore, if the proportion of earnings \hat{x} ated traders lies in the upper range of
11 the interval $[0,1]$, the reported earnings under conservative accounting are more value relevant
12 than the ones under mark to market. Otherwise, the reported earnings under mark to market
13 are more value relevant than the ones under conservative accounting.
14

16 **Index terms**— accounting methods, conservative accounting, market accounting, security market.

17 **1 Introduction**

18 The value relevance of earnings is referred to the association between earnings and security market values. This
19 association was explored as early as in 1968 by Ball and Brown (1968), who examine the usefulness of accounting
20 income numbers to investors. In the past two decades, a large number of empirical articles examine this association
21 in different contexts. For example, Alford et al. ??1993) find empirical evidence that this association between
22 earnings and stock returns is stronger in countries where capital is traditionally raised in capital markets and
23 there are weaker links between financial and tax reporting. Chan and Seow (1996) examine this association
24 under foreign GAAP versus U.S. GAAP. They find a stronger association using foreign GAAP earnings than
25 using earnings adjusted to U.S. GAAP. Ali and Hwang (1999) examine the relationship between value relevance
26 and country specific factors related to financial reporting. They find that the value relevance of financial reports
27 is lower for countries where the financial systems are bank-oriented rather than market-oriented.

28 Recently, in the literature, a group of articles focuses on examining the value relevance of accounting
29 information under mark to market accounting. Barlev and Haddad (2003) advocate that historical cost accounting
30 hides the real financial position and the fair value accounting is more value relevant than historical cost accounting.
31 Ahmed and Takeda (1995) supports fair value accounting in their examination of the relation between unrealized
32 or realized gain/losses and bank returns in normal period. Beatty et al. (1996) also find empirical evidence
33 supporting fair value accounting in analyzing the bank share prices around the adoption of SFAS 115. Petroni
34 and Wahlen (1995) argue that property-liability share prices can be explained by fair value of equity investments
35 and U.S. Treasury investments, even after controlling for historical costs. Venkatachalam (1996) shows that the
36 fair value estimates for derivative help explain cross-sectional variation in bank share prices and that the fair
37 values have incremental explanatory power over and above notional amounts of derivatives. Gebhardt et al.
38 (2004) find strong evidence in favor of fair value accounting within the German banking sector, although there
39 are additional problems to overcome when extending fair value measurements to more classes of financial assets
40 and liabilities.

41 Another group of articles in the literature examines the value relevance of accounting information under
42 conservative accounting. For example, Kousenidis, Ladas and Negakis (2010) examine how conservatism affects
43 value relevance of earnings. They use the data in Greece from the period 1989 to 2003. Their empirical evidence
44 suggests that conservatism helps earnings to exhibit sufficient information content for security prices through

3 THE MODEL

45 alleviating measurement errors in earnings. Brown et al. (2006) find evidence in their international study
46 among 20 countries that conservatism is associated with a higher level of value relevance in countries with
47 high accrual intensity. However, the empirical results of ??alachandran and Mohanram (2005) indicate that
48 accounting conservatism is not related with the value relevance of accounting information. In their study on
49 whether conservatism has caused the value relevance of accounting information to decline, the data over a
50 twenty-five year period from 1978-2002 is used. They find that the value relevance of accounting information has
51 declined only for firms with the least conservative accounting and changed insignificantly for firms with the most
52 conservative accounting. Hellman (2008) in his study of how the conservatism principle is applied in Europe
53 under IFRS, reports that the mixing of consistent and temporary conservatism practice can reduce the value
54 relevance of earnings information. standard provide more value relevant accounting information. This paper
55 takes an analytical approach to formally investigate whether earnings under conservative accounting is more
56 value relevant than the ones under mark to market accounting.

57 Specifically, this paper sets up a one-period model of a competitive security market with one risk-free asset
58 and one risky asset. The payoff of the risky asset is normally distributed. Rational traders have correct prior
59 knowledge about the normal distribution of the risky asset's payoff. Earnings fixated traders; on the other hand,
60 underestimate the mean and variance of the asset's payoff under historical cost accounting. The reason for this is
61 as follows. Due to the nature of U.S. accounting standards being conservative, accounting earnings numbers do
62 not incorporate the expected future profits from the positive net present value projects until they are realized while
63 the expected future losses from the negative net present value projects are incorporated in the current accounting
64 earnings numbers. The failure of the historical cost recognition rules to recognize the expected future profits
65 of positive net present value projects in current accounting earnings implies that accounting earnings numbers
66 underestimate the mean and variance of the asset's payoff (economic earnings). This means that earnings fixated
67 traders who are fixated on accounting earnings would underestimate the mean and variance of the asset's payoff.

68 Under an alternative accounting of mark to market, earnings fixated traders are indistinguishable from rational
69 traders. Also, with mark to market, the payoff of the assets is the same as the accounting earnings number
70 generated under mark to market accounting.

71 Before any trade takes place, an informational signal about the risky asset's payoff is released to the market.
72 Based on the informational signal received, rational and earnings fixated traders both rationally update their
73 estimates of the mean and variance of the asset's payoff given their prior knowledge. The utilities of both rational
74 and earnings fixated traders are exponential function of their wealth. In this competitive market, both types
75 of traders behave as price takers. They trade against each other or against noise traders whose demand is
76 completely random. The demand for risky asset of both rational and earnings fixated traders is generated from
77 the maximization of their utilities.

78 Note that the notion of earnings fixated traders is originated from the Functional Fixation Hypothesis in the
79 financial markets. This hypothesis claims that investors who are unfamiliar with different accounting methods of
80 generating accounting output rely on reported accounting numbers for their investment strategies without paying
81 attention to the procedures used in producing these numbers. There are some empirical evidence showing the
82 existence of such fixated traders. For example, Bradshaw et al. (2001), Khurana et al. (2003) and Hermann et
83 al. (2007) show that analysts do not pay enough attention to the differential persistence of earnings components
84 and they tend to focus on total earnings. Brown et al. (2000) present evidence that neither analysts nor investors
85 make proper use of note disclosure in financial reports.

86 This paper proves that the reported earnings are value relevant under both conservative accounting and mark
87 to market accounting. Furthermore, if the proportion of earnings fixated traders lies in the upper range of the
88 interval $[0, 1]$, the reported earnings under conservative accounting are more value relevant than the ones under
89 mark to market. Otherwise, the reported earnings under mark to market are more value relevant than the ones
90 under conservative accounting.

91 The remainder of the paper consists of three sections. The next section presents the model. The results are
92 discussed in Section three. Section four concludes the paper.

93 2 II.

94 3 The Model

95 This section constructs a one-period model of a competitive asset market. There is one risk-free asset and one
96 risky asset. The payoff for the risk-free asset is one and the payoff for the risky asset (denoted as) is normally
97 distributed with the mean of and variance of There are three types of traders: earnings fixated traders, rational
98 traders and noise traders.

99 Earnings fixated traders are functionally fixated on accounting earnings and they view the accounting earnings
100 numbers as the asset's payoff (economic earnings). Since conservatism in accounting requires more verifiability
101 for the recognition of gains than for the recognition of losses, the accounting earnings numbers do not incorporate
102 the expected future profits from the positive net present value projects until they are realized while the expected
103 future losses from the negative net present value projects are incorporated in the current accounting earnings
104 numbers. The failure of the historical cost recognition rules to recognize the expected future profits of positive net
105 present value projects in current accounting earnings implies that accounting earnings numbers underestimate

106 the mean and variance of the asset's payoff (economic earnings). Denote earnings fixated traders' prior belief
 107 about the mean and variance of the risky asset's payoff as and respectively, where and Rational traders have
 108 correctly estimated the mean and variance of the asset's payoff.

109 An informational signal about the risky asset's payoff is released to the market before any trade takes modeled
110 according to where is normally? ? ? 2 ? ? ? ? ? 2 ? ? ? ? ? ? ? ? 2 ? ? ? ? 2 ? ?

111 place. The informational signal (denoted as \hat{s}) is Based on the informational signal received, rational traders
 112 update their prior beliefs about the asset's payoff according to and respectively, where the subscript indicates
 113 rational traders andi?" \hat{s} = ? + ? Global Journal of

The derivations of equation (1) and (??) are presented in the appendix. Similarly, given their prior beliefs about the mean and variance of the asset's payoff, earnings fixated traders rationally update their conditional mean and variance about the asset's payoff according to and respectively, where the subscript indicates earnings fixated traders and Note that presented in the appendix. The utility functions of both rational and earnings fixated traders are exponential functions of their wealth. Their initial wealth for both rational and earnings fixated traders are assumed to be Since the asset market is assumed to be perfectly competitive, rational and earnings fixated traders both behave as price takers. In other words, they take the risky asset price as given. Denote trader demand for the risky asset as where Trader wealth at the end of the period is the summation of their initial wealth and profits from trading the risky asset in the period. That is, where is the asset price. Trader demand for the risky asset is generated from the maximization of where and is the coefficient of absolute risk aversion. With normality assumption, the demand for the risky asset for trader that maximizes his or her exponential utility function is obtained from solving the following optimization problem: Substituting equations (1) through (4) into the optimization problem (5), the demand for the risky asset for trader (where) is solved as, Noise traders' demand for the risky asset is modeled to be normally distributed with the mean of zero and variance of

The supply of the risky asset is assumed to be zero. The risky asset price in this competitive market is determined by the market clearing condition below:

$$\sum_i p_i \cdot x_i = \sum_i p_i \cdot 1 = \sum_i p_i \cdot 0 = 0$$

136 (i)

138 4 The Result

139 This section compares the value relevance of the reported earnings under conservative accounting and market
 140 to market accounting. It proves that the reported earnings are value relevant under both types of accounting
 141 methods. In addition, it also proves that the reported earnings under one of the accounting methods can be more
 142 value relevant than the ones under the other accounting method provided that the right model parameter value
 143 restrictions are imposed. Substituting equation (??) into (7), the asset price is solved as the following:

144 Taking a derivative of equation (??) with respect to y yields the following:

145 Under an alternative accounting of mark to market, earnings fixated traders become indistinguishable = ?(1 ? ?
 146 ?) ? ? ? (? ? ? ? + ? ? ? ? ? ? ?) ? ? ? ? ? + ?? ? + ? ? ? ? (i ?? + ??? 2 ?) ? ? ? ? ? + ?? ? =
 147 ?? ? (? ? (? ? 1) ? ? + 1) + ?? ? ? ? (1 ? ? ?) + ? ? ? ? (i ?? + ??? 2 ?) ? ? ? ? ? + ?? ? ? (8)(9)? ?
 148 ?? ? ? ? = ?? ? (1 ? ? ?) ? ? ? ? ? + ?? ? ? ? ? ? ? 1 . ? ? = ?, ? ? = ? ?

149 (due The derivations of equations (3) and (4) to
 150).

able to rational traders. In other words, W denotes the proportion of earnings fixated traders in the population of rational and earnings fixated traders. (10) Note from equation (10) a positive association between earnings under conservative accounting and the asset price due to D and Hence, using equation (??), the asset price (denoted as P) is solved as Taking a derivative of equation with respect to earnings under mark to market accounting results in the following: which is positive due to 1 This means that an increase in earnings under markto market leads to an increase in the asset price.

160 This means that if the proportion of earnings fixated traders lies in the upper range of the interval $[0, 1]$, the
161 reported earnings under conservative accounting are more value relevant than the ones under mark to market.
162 Otherwise, the reported earnings under mark to market are more value relevant than the ones under conservative
163 accounting.

164

165 **5 Concluding Remarks**

166 This paper compares the value relevance of earnings under two different accounting methods (namely, conservative
167 accounting and mark to market accounting) in a competitive security market. The earnings information under
168 conservative accounting is transmitted into the market through the trading of earnings fixated traders. The
169 results of the model suggests that under certain model parameter restrictions, the asset price incorporates more
170 information from the earnings number generated from conservative accounting; on the other hand, under other
171 model parameter restrictions, the asset price incorporate more information from earnings generated from mark
172 to market accounting.

173 The future research agenda in this direction is to investigate the impact of accounting standards on the value
174 relevance of earnings under other market settings. One example of such market setting is the one that involves
175 traders acting strategically instead of taking price as given.

176 V.

177 **6 Global Journal of Management and Business Research**



Figure 1:

178 1

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- 179 With the results (a), (b) and (c), equations (??) and (??) follows from Theorem 1.
180 Derivation of equation (??) and (??): Notice that where is estimated by conservatism traders as normally
181 distributed with mean
182 deviation of and is also normally distributed with mean zero and standard deviation of furthermore, and
183 standard
184 and are independent. Hence, the following are true, (a) and are jointly normal distributed;
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