Chapter 6

The Measurement Approach to Decision Usefulness
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- Concept of measurement approach
- Are securities market efficient? Behavioural finance versus investor rationality
- Other reasons for measurement approach
  - Value relevance of earnings information
  - Low and falling?
- Clean surplus theory
- Estimating firm value
- Measurement approach faces a reliability constraint
- Auditor liability
- Conservatism Impairment tests
What Is the Measurement Approach?

- Greater use of current values in the financial statements proper
- Recall two versions of current value
  - Fair value: exit price
  - Value-in-use: present value of future cash receipts or payments
- Goal of measurement approach is to increase decision usefulness over that of information approach
Why Are Accountants Moving Towards a Measurement Approach?

• To extent average investor not fully rational and securities markets not fully efficient, a measurement perspective may improve decision-making and market efficiency
  – The greater relevance of current values may enable ordinary investors to improve their decision making
  – This assumes that the increased relevance is not outweighed by lower reliability
Why Are Accountants Moving Towards a Measurement Approach? (Continued)

**Low R squared**

- Empirical evidence that net income explains very little share price variation (i.e., low “market share”). Lev (1989), Section 6.9
  - Better measurement may increase accounting “market share” in explaining share price changes
Why Are Accountants Moving Towards a Measurement Approach? (continued)

• Ohlsön’s clean surplus theory
  – A theoretical framework supportive of a measurement approach

• Auditor Liability
  – Better measurement may reduce auditor liability when firms become financially distressed
6.2 Are Securities Markets Fully Efficient?

- Behavioural finance
  - Behavioural characteristics that question investor rationality and market efficiency
    - Limited attention
    - Conservatism
    - Overconfidence
    - Representativeness
    - Self-attribution bias
      - Leading to momentum
    - Motivated reasoning
Pockets of Inefficiencies

• I have given you many tips to make money
  – Keep a monkey as pet
    • Select stocks for you to buy by throwing darts at lists
    • Additional benefits – monkey throw darts at your boyfriend(s) / girlfriend(s) when they disagree with you for any reason

• Research also found many ways to make “extra” money
  – Or also called “excess” or “abnormal” return in Ball & Brown and other research studies
  – Buy stocks in December, sell in January
  – Buy “value” stocks
  – Buy junk bonds
  – ............
6.2.2 Prospect Theory

• An Alternative Theory of Decision Making
  – Separate evaluation of gains and losses
    • Narrow framing
  – Weighting of probabilities
    • Overconfidence: event probabilities underweighted
    • Representativeness: event probabilities overweighted
  – Prospect theory utility function
    • See next slide
    • Leads to a disposition effect
    • Leads to earnings management to avoid reporting small losses?

>> Continued
Figure 6.2  Prospect Theory Utility Function
Prospect Theory (continued)

• Empirical evidence re prospect theory
  – Knetsch (1989): An experiment that supports loss aversion, using student subjects
  – List (2003): as subjects become more experienced, their decisions converge towards rational decision theory predictions

• Extent to which prospect theory underlies financial reporting seems unclear at present
6.2.3 Is Beta Dead?

- If CAPM is valid, beta should explain stock returns
  - Higher beta $\rightarrow$ higher return, and vice versa
  - But empirical results weak, mixed

- Other risk variables that explain stock returns
  - Book-to-market ratio
  - Firm size
Can Beta (thus CAPM) Be Rescued?

• Answer 1: yes
  – Non-stationarity of beta

• Answer 2: no
  – Behavioural finance
    • Share returns driven by investor overconfidence, not by beta

• Conclusion
  – Beta not dead, but other risk variables (e.g., book-to-market, firm size) also explain share returns
  – This suggests increased role of reporting on risk
6.2.4, 6.2.5 Excess Market Volatility and Bubbles

- **Shiller (1981)**
  - Argues for excess market volatility relative to dividends

- **Ball, Sadka & Sadka (2009)**
  - Evidence based on earnings, not dividends, contradicts Shiller’s argument

- **Bubbles**
  - Extreme case of momentum
  - Herd behaviour may contribute
  - Was market behaviour pre-2007-2008 meltdowns a bubble?
6.3 Efficient Securities Market Anomalies

- **Post-announcement Drift (PAD)**
  - Abnormal share returns drift upwards or downwards for several months following GN or BN in quarterly earnings
  - Efficient securities market theory predicts immediate response to GN or BN in reported earnings

» Continued
Efficient Securities Market Anomalies (continued)

• Possible reasons for PAD
  • Investors’ limited attention
  • Conservative financial reporting
  • Effects of inflation on financial statements
  • Lack of timeliness of analyst forecast revisions
  • Investors’ lack of confidence in management forecasts

• Some recent evidence that PAD has almost disappeared (net of costs)
• **Accruals anomaly**
  – Net income = OCF ± net accruals
  – Accruals have lower persistence than cash flows
    – If markets efficient, ERC should be greater the higher the proportion of OCF relative to accruals, and vice versa
    – Empirical evidence is that ERC does not reflect the proportion of OCF to accruals
  – **Possible reasons for accrual anomaly**
    • Low persistence, low reliability accruals may be ignored by investors
    • Investors may ignore possibility of lower future returns for growth companies
  – Some recent evidence that accruals anomaly has almost disappeared (net of costs)
Implications of Anomalies

- To extent investors not fully rational and securities markets not fully efficient, role of financial reporting increases
  - Improved financial reporting may reduce behavioural biases and share mispricing
6.4 Limits to Arbitrage

• Reasons why anomalies may persist over time
  – Behavioural biases
    • E.g., limited attention, conservatism
    • As a result, investors continue to ignore full information content of financial statements
  – Rational investors, but subject to:
    • Transactions costs
      – It may not be worth exploiting anomalies if costs are too high
    • Idiosyncratic (i.e., firm-specific) risk
      – To exploit anomalies, investors must depart from diversified investment strategy, thus bearing idiosyncratic risk
      – Resulting risk may deter investors from exploiting the anomaly
  – Persistence of anomalies may be due to unsophisticated, small trade, investors
Why Do Anomalies Occur in First Place?

• In face of estimation risk, rational investors learn over time, revising their beliefs as new information comes along
  • This creates share price behaviour similar to that of the anomalies
6.5 A Defence of Average Investor Rationality
(optional section)

• Dropping rational expectations assumption
  • Brav & Heaton (2002).
    – In face of estimation risk, rational investors learn over time, revising their beliefs as new information comes along
    – Instead of immediately figuring out full information content of financial statements, as in rational expectations assumption
  • This suggests that rational investor behaviour can create share price behaviour similar to that of the anomalies
A Defence of Average Investor Rationality

(optional section, continued)

• Dropping common knowledge assumption
  • Recall common knowledge assumption that everyone knows that everyone knows all available information…
  • This rules out possibility that one class of investors may know more than others (higher order beliefs), and will invest to exploit their better information, instead of the diversified investment strategy assumed by efficient markets theory
    • In their model, investment strategy of investors with higher order beliefs creates share price behaviour over time similar to PAD and accrual anomalies
6.6, 7 Conclusions

• High quality financial reporting can help behaviourally biased investors improve decision making
  – A measurement approach improves reporting quality to the extent increased relevance outweighs increased reliability

• Securities market anomalies can be explained by investor behavioural biases or rational decision theory
  – Time for the two theories to begin moving together?

• Empirical evidence supports reasonable securities market efficiency except during periods of liquidity pricing.
6.9 The Low Value Relevance of Financial Statement Information

- Low $R^2$ problem
  - $R^2$ a measure of proportion of share return explained by accounting information
    - Empirical evidence shows $R^2$ quite low (2 – 5%)
    - Getting worse?
  - Effect of accounting information on share price can be *statistically* significant (e.g., ERC research, Chapter 5) but *practically* insignificant (i.e., low $R^2$)
  - Suggests lots of scope to improve financial reporting
    - Will current value accounting help?
6.10 Ohlson’s Clean Surplus Theory

• What is it?
  – Expresses value of firm in terms of accounting variables
• Firm value = net assets ± present value of future abnormal earnings (Goodwill)
6.10.1 Three Formulae for Firm Value

- **Firm value = PV of expected future dividends**
  - The fundamental determinant of firm value

- **Firm value = PV of expected future cash flows**
  - The traditional approach in accounting and finance

- **Firm value = net assets ± PV of expected future abnormal earnings (goodwill)**
  - The clean surplus approach

- **In principle, all 3 formulae give same firm value**
Assumptions of Clean Surplus Theory

• No arbitrage, dividend irrelevancy
  – These assumptions similar to ideal conditions
• All gains and losses go through net income (i.e., “clean” surplus)
  – Can be relaxed, but beyond our scope
Unbiased v. Biased Accounting in Clean Surplus

• Unbiased accounting
  – Current value accounting for all assets and liabilities
  – Unrecorded goodwill = zero

• Biased accounting
  – E.g., historical cost accounting, conservative accounting
  – Unrecorded goodwill ≠ zero

• Relation to measurement approach
  – Increased use of current value accounting puts more of firm value on balance sheet.
  – Less need to estimate unrecorded goodwill
6.10.3 Using the Theory to Estimate Firm Value

- Begin with balance sheet net assets as at date of valuation
- Then, estimate expected abnormal earnings (unrecorded goodwill)
  - Abnormal earnings: ability of firm to earn more than cost of capital
- Estimated firm value = net assets as at date of valuation ± expected PV of abnormal earnings

» Continued
Estimating Cost of Capital (continued)

- Use CAPM
  \[ E(R_{jt}) = R_f(1 - \beta_j) + \beta_j E(R_{Mt}) \]
- \( E(R_{jt}) \) = cost of capital
- \( E(R_{Mt}) \): suggest use market risk premium:
  - 3 to 4% in recent years
  - \( E(R_{Mt}) = R_f + 4\% \)
  - \( R_f \) = risk-free interest rate
- Estimate \( \beta_j \)

» Continued
Estimating Beta (continued)

- Usually available on a financial website
  - Google finance
  - Reuters
- Estimate it yourself, using about 30 recent observations on $R_{jt}$ and $R_{Mt}$
- Then, insert into CAPM to estimate $E(R_{jt})$
Estimating Expected Abnormal Earnings (continued)

• Choose a time horizon (e.g., 7 years) over which abnormal earnings expected to persist
• Calculate ROE from financial statements for year of valuation
• Calculate dividend payout ratio (k)
• Year-by-year over time horizon:
  – Project book value
    • End-of-year BV = opening BV + (1-k)NI

» Continued
Estimating Expected Abnormal Earnings (continued)

- Estimate actual future earnings
  - Estimated actual future earnings = ROE x opening BV
- Calculate expected normal earnings
  - cost of capital x opening BV
- Abnormal earnings = actual earnings - expected earnings
Conclusion to Estimating Firm Value

- Calculate PV of expected abnormal earnings at cost of capital over time horizon
- Estimated firm value = net assets ± PV of expected abnormal earnings
- NB: assumption that firm earns only normal return beyond chosen time horizon, i.e., ROE = E(R_{ij})
  - Other assumptions are possible
Significance of Clean Surplus Theory to Accountants

• An alternate approach to estimating firm value
  – Theoretically sound
  – Uses accounting variables
  – May be easier to apply than discounted cash flow
• Increased emphasis on predicting net income
  – Since needed for expected abnormal earnings calculation
• Supports measurement approach
6.11 Auditor Liability

- Will a measurement approach reduce auditor liability?
  - Perhaps, if investors subject to limited attention
    - Auditor can claim that the financial statements *proper* anticipated value changes
- But, current values may be subject to manager bias if no market value available (incomplete markets)
  - Then, may be hard for auditor to resist manager bias
6.12 Auditor Liability and Conservative Accounting

Example 6.3: conditional conservatism

- A change in asset value has already occurred
- Assume investor is risk averse
- Investor opportunity loss of expected utility if a decline in asset value is not recorded = 1.02
- Investor opportunity loss if an increase in asset value not recorded = 0.52
- Then, investor more likely to sue auditor if a decline in asset value not recorded.
- Auditor reaction: ceiling tests, to reduce likelihood a decline in asset value is unrecorded, thereby reducing likelihood of lawsuit
Auditor Liability and Conservative Accounting

Example 6.4: unconditional conservatism
- Asset value = $10,000 at financial statement date, but value may change in future
  - If asset declines in value, investor loses utility of 1.02
  - If asset increases in value, investor loses utility of .54

How should auditor value asset at statement date?
- If asset valued at $10,000 (current value), investor expected utility = 39.93
- If asset valued at $9,400 (conservative valuation), investor expected utility = 40.00

This suggests an investor demand for conservatism
Conclusions on Measurement Approach

• Assuming reasonable reliability, current value accounting can increase decision usefulness relative to information perspective

• Increased use of current value accounting (including ceiling tests) in financial reporting
  – Suggested reasons
    • Markets not fully efficient
    • Low explanatory power of net income for share returns
    • Ohlsön clean surplus theory
    • Auditor liability

• Decision usefulness for investors may be further increased by conservative accounting