

Does the Basu (JAE, 1997) model really measure conservatism in earnings?

The details of the Basu measure of earnings conservatism is to be found in his paper,

**“The conservatism principle and the asymmetric timeliness of earnings”,
Journal of Accounting & Economics, 1997, 3-37.**

His measure of earnings conservatism has been taken up in a number of key papers.

Pope & Walker, International differences in earnings, Journal of Accounting Research, Supplement 1999 (which examines the difference in conservatism between pre and post extraordinary items) .

Ball, Kothari & Robin, “The effect of international institutional factors on properties of accounting earnings”, Journal of Accounting & Economics, vol 29/1 Feb 2000, 1-51 (which looks at inter country conservatism).

Givoly & Hayn, “The changing time series properties of earnings, cash flows and accruals: has financial reporting become more conservative?”, Journal of Accounting and Economics, June 2000, Vol 29/3, 287-320 (which looks at the changes in conservatism over time).

Basically, the earnings conservatism principle is that future bad news is anticipated, whereas future good news is not. The vehicle for this anticipation is accruals. An example of accruals anticipating bad news is a write down of stock because of obsolescence.

Basu develops a model in which this property of accruals¹ (anticipating bad news) can be measured.

The objective of this comment is:

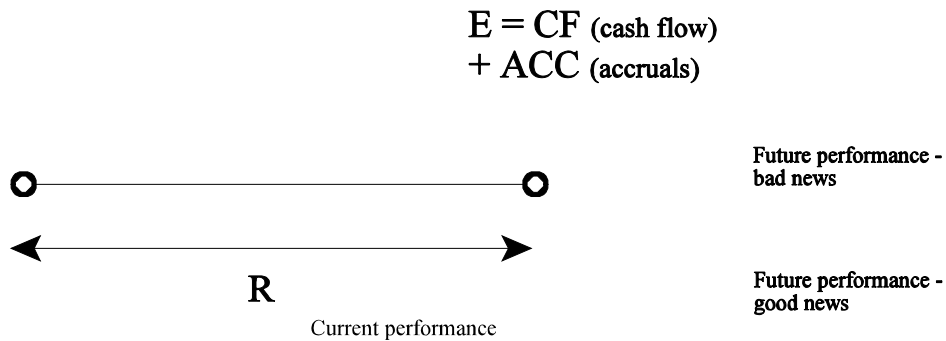
to identify some hidden assumptions in the measurements which have been little discussed in the literature; and

to assess whether (in the light of these assumptions) it is likely that the Basu measure is really a measure of earnings conservatism.

¹Obviously, accounting accruals serves other functions, such as the recognition of non cash transactions in the profit and loss account.

1. A summary of the basic idea

The basic idea in the Basu paper is to measure the association between earnings (E) and stock returns (R) measured over the accounting year. This association can be depicted in the figure below, in which the investor observes current performance, but there is also either good or bad news about future performance of the company.



The stock return, R, captures

- (i) the impact of the current performance (Beaver, Lambert & Ryan JAE 1987), but also
- (ii) future performance, both good news and bad news (Kothari & Sloan JAE 1992 & Hayn, JAE, 1995)

Accounting earnings, E, is constructed using conservative accounting principles, it reflects

- (i) the impact of current performance, and
- (ii) the bad news component of future performance (through the accruals process, eg bad debts and stock obsolescence).

In contrast to R, earnings E does not anticipate future good news (eg future sales). Therefore the relationship between R and E will vary. When there is significant bad news in the future, the association should be stronger than when there is significant good news in the future. This is because E captures future bad news (but *not* future good news) whereas R captures both the good and the bad future news.

The relationship is captured in the following equation.

$$NI = b_0 + b_1 RD + b_2 R + b_3 R \cdot RD \quad (1)$$

where

NI is the earnings yield, which is E (earnings) scaled by share price at the beginning of the fiscal year

R is the stock return over the fiscal year ² (the change in market value) scaled by lagged price (note that the change is not market adjusted)

RD is 1 when $R < 0$
is 0 otherwise.

An important key to understanding the role of this variable in the model, is that to note that when R (the stock return) is negative, this is assumed to be because R is impounding bad news about the future. Therefore this dummy variable takes a value of 0 when R is *not* anticipating future bad news, and takes a value of 1 when R *is* anticipating future bad news.

The coefficient b_2 captures the relationship between E and R when (i) both E & R reflect current performance and (ii) future good performance is anticipated by R but not by E.

The coefficient b_3 captures the increase in the strength of the relationship between E & R when E (as well as R) anticipates bad performance in the future. This coefficient is the Basu measure of earnings conservatism, since it is entirely due to earnings capturing anticipated bad performance in the future. The estimate of b_3 in Basu is around 0.16 ³.

This conservatism of earnings operates through accruals. Although accruals may reflect timing differences between the recording of a transaction and the flow of cash, accruals are also used to incorporate future bad news (for example, the recognition of anticipated bad debts, and the obsolescence of stock). The accrual adjustments to cash flow are at the heart of the accounting measurement system.

It is this conservatism coefficient, b_3 , which is investigated in the 3 key studies referred to at the beginning. However, we suggest below that the conservatism of accounting earnings is not the only way of interpreting the b_3 coefficient.

2. Does the b_3 coefficient in equation 1 really measure earnings conservatism?

The short answer to this is, probably not. But the details of the arguments are discussed below.

I - THE DUMMY VARIABLE, RD, WHAT DOES IT MEASURE?

Above we outline the justification for including dummy variable RD. When the stock return is negative (and $RD=1$), this is assumed to be because R is impounding bad news about the future. The questions are then:

the extent to which this bad news is captured by accounting earnings through the accruals process (ie. measuring the conservatism of earnings);

whether conservatism varies across countries;

whether conservatism changes over time.

² In the Basu study in fact, the stock return is measured from -9 months to +3 months in relation to the fiscal year end. However, for the purposes of explanation it is easier to consider measuring the return over the fiscal year. Other studies such as Beaver, Lambert, Morse (JAE March 1980) suggest that the two methods give similar results. Also Ball, Kothari Robin (JAE 2000) measure returns over the fiscal year.

³ Basu (1997) Table 1 Panel C, and Table 2 Panel A.

Of course, this interpretation makes sense. However, the dummy variable is an imperfect measure of the conditions when accounting earnings (through accruals) may be in a position to anticipate future bad news.

For example, R may be negative because the stock market is reducing its expectation about future good news (a contract for future sales, for example). This is bad news in a sense, but these are not circumstances in which earnings might be able to reflect the information. If all cases of negative R were of this nature, then we would find that b_3 to be 0, because earnings do not respond to these circumstances. And therefore we may conclude that earnings are not conservative. But of course, we already know that since earnings do not reflect future good news, they cannot reflect changes in expectations about future good news. Therefore, in excessive volatile stock markets, we are likely to conclude that earnings are not conservative.

What this means is that the earnings conservatism measured in the Basu model is not quite the conservatism referred to by accountants. At the heart of accounting conservatism is a negative cash flow, as when stock is written down below its purchase price. The Basu conservatism is more related to downgrades in expectations, whether or not this includes any negative cash flows.

II - WHICH WAY DOES CAUSALITY RUN?

Essentially the Basu reasoning is that the b_3 coefficient captures a more sensitive relationship between E & R when R is negative. The interpretation of this is that when R is negative, R is anticipating future bad news and therefore the nature of E changes. That is, it is the changing nature of E which accounts for the more sensitive relationship. This changing nature of E is what is termed earnings conservatism.

But another explanation is also possible. **This is that it is the changing nature of R which accounts for a significant coefficient b_3 .** For example, a situation of $R < 0$ may be driven by current performance as well as anticipated future performance. Therefore $R < 0$ may be accompanied by a declining earnings performance of the company. If the market believes that a decline in earnings performance is more permanent than a rise in earnings this may give rise to a greater sensitivity between earnings and returns when R is negative. We examine this argument more carefully next.

III - THE BASU TESTS (THE PERMANENCE OF NEGATIVE AND POSITIVE EARNINGS CHANGES)

Of course Basu is well aware of this reverse causality problem, although he does not discuss it in these terms. But he does conduct tests to compare the permanence of negative and positive earnings changes. He finds (Basu, Table 3) that positive earnings changes are more permanent than negative earnings changes. This suggests that the reverse causality issue is not a real problem.

However, evidence suggests that the market does not always fully understand the earnings process.

Abarbanell and Bernard, 1992, "Tests of analysts' overreaction/underreaction to earnings information as an explanation for anomalous stock price behaviour", *Journal of Finance*, July, 1181-1207.

Sloan, 1996, "Do stock prices fully reflect information in accruals and cash flow about future earnings?", *Accounting Review*, July, 289-315.

Ball & Bartov, 1996, "How naive is the stock market's use of earnings information?", Journal of Accounting & Economics, June, 319 - 337.

In particular, Abarbanell & Bernard (1992) argue that the market underreacts to bad news. Therefore, despite the realities of the earnings process that Basu finds, it is possible that the market believes that negative earnings changes are more permanent than positive earnings changes. This would give rise to the coefficient b_3 being driven by changes in the nature of R rather than being a measure of earnings conservatism as suggested by Basu.

The central issue here is whether the market properly interprets earnings changes. Therefore, should we put the earnings conservatism debate on hold until the "how the market interprets earnings changes" issue is settled? Fortunately this is not necessary, and again Basu realises this, although he does not say it in this way. He conducts further tests in order to shed light on the reverse casualty issue. This is discussed in the next section.

IV - RUNNING THE BASU EQUATION WITH CASH FLOW INSTEAD OF EARNINGS

One way to cut through the debate about causality is to decompose the dependent variable, earnings, in to its cash flow and accruals components. If the significance of the coefficient b_3 is due to earnings conservatism (and not due to the changing nature of R), then the changing nature of earnings will be reflected in the accruals component of earnings. This is tested by Basu estimating equation 2.

$$CF = b_0 + b_1 RD + b_2 R + b_3 R \cdot RD \quad (2)$$

where CF = cash flow from operations (scaled by price)

Equation 2 is the same as equation 1 except that the left hand side variable is the cash flow component of earnings. If the significance of b_3 in equation 1 is due to accruals anticipating future bad news, then when cash flow is the dependent variable, the significance of b_3 should disappear.

The result of estimating equation 2 (given in Basu's Table 2) is that b_3 is 0.125 and significant! There is some discussion of the results on pages 16-19. He argues that this value of b_3 is smaller than its value of 0.161 when E is the dependent variable (equation 1). However, this explanation is not really convincing. The fact that the b_3 coefficient in equation 2 is significant at all is puzzling and seems inconsistent with the earnings conservatism-accruals story.

Cash flow in the current period is unlikely to be influenced by poor future performance⁴ and therefore the increased sensitivity between CF and R is more likely due to the changing nature of R as suggested by our alternative explanation. However, the two coefficients for b_3 **are different** which suggests that accruals is associated with the more sensitive relationship between earnings and R when R is negative.

Another important aspect to the result is that the b_3 coefficient in equation 1 cannot be interpreted as a measure of earnings conservatism, since part of the size of the coefficient is due to factors other than accruals.

⁴ Except perhaps that creditors might allow less credit if performance were extremely poor. But this would be limited to substantial declines in anticipated performance.

V - BALL, KOTHARI ROBIN TESTS OF CASH FLOW

The main feature of the Ball Kothari Robin (BKR) paper is to compare the Basu tests across different countries. In addition, like Basu, they also run their tests using cash flow as the dependent variable as well as earnings. Their earnings results (from their Table 2) and their cash flow results (from their Table 6) are given below.

The results are much the same as Basu's in that the coefficient b_3 is still significant when cash flow is the dependent variable (column 2). As with Basu's results, this result casts doubt on the earnings conservatism-accruals story as we have discussed above.

| Implied effect of accruals from Ball Kothari Robin | | | |
|---|--|---|-----------------------------------|
| | b_3 with Earnings as the dependent variable (from BKR, Table 2, Panel A) | b_3 with Cash flow as the dependent variable (from BKR, Table 6, Panel A) | Implied effect of accruals |
| | Column (1) | Column (2) | Column (3) (1) - (2) |
| Common law countries | | | |
| Australia | 0.37 | 0.16 | 0.21 |
| Canada | 0.40 | 0.25 | 0.15 |
| USA | 0.29 | 0.10 | 0.19 |
| UK | 0.15 | 0 | 0.15 |
| Code law countries | | | |
| France | 0.07 | 0 | 0.07 |
| Germany | 0.10 | 0 | 0.1 |
| Japan | 0.01 | 0.08 | -0.07 |
| | | | |
| Common law countries | 0.31 | 0.12 | 0.19 |
| Code law countries | 0.01 | 0 | 0.01 |

Interestingly, part of the BKR analysis is the variation in conservatism within the common law and code law country groupings. They argue (p 28) on the basis of the b_3 for earnings (column 1) that UK is least conservative (smallest) of the common law group. However we argue above that b_3 in column 1 is not an appropriate measure of earnings conservatism, since part of the size of the coefficient is due to factors other than accruals. A better measure of earnings conservatism would seem to be the implied effect of accruals, that is the difference between b_3 with earnings and b_3 with cash flow, which is given in column 3.

On this basis, all the common law countries look remarkably similar. The code law countries are also similar, with the exception of Japan. Japan has a negative coefficient on accruals, suggesting that earnings are boosted by accruals when poor performance is anticipated by stock returns.

3. Direct tests of the “conservatism through accruals” story

I - THE BASU EQUATION WITH ACCRUALS

A better test of the “conservatism through accruals” story would perhaps have been to run the equation with ACC (accruals) as in equation 3

$$\text{ACC} = b_0 + b_1 \text{RD} + b_2 R + b_3 R \cdot \text{RD} \quad (3)$$

In this case b_3 would be a better measure of conservatism.

Basu mentions (footnote 8, page 16) that Dechow (1994)⁵ finds that accruals and cash flow are negatively correlated contemporaneously, which would complicate a direct test on accruals. Unfortunately, the nature of the complication is not explained and the reference to Dechow is imprecise.

However, even this test does not really overcome the reverse causality problem. Specifically, a significant coefficient b_3 in equation 3 may arise because either:

- (i) ACC makes earnings conservative by bringing expected future bad news in to current level of performance, the conservatism explanation, or
- (ii) the reverse causality explanation, that R falls substantially when ACC is negative because this is thought to be a relatively permanent state of affairs. Such a belief would be understandable, since Givoly & Hayn (2000, Table 2) find that accruals are consistently negative for sustained periods. Although this evidence is at the aggregate level, it may support the market's belief about individual company accruals.

II - A SUGGESTED TEST USING ABNORMAL ACCRUALS TECHNOLOGY

A direct test of the conservatism through accruals story might be to detect abnormal accruals using the cross sectional methods shown in Peasnell, Pope & Young, “Detecting earnings management using cross section abnormal accruals”, Accounting and Business Research, Autumn 2000 30/4. Although the times series methods of detecting abnormal accruals have been shown to have low power, their cross sectional versions are able to detect abnormal accruals more frequently.

⁵ “Accounting earnings and cash flows as measures of firm performance: the role of accounting accruals”, Journal of Accounting & Economics, July, 3-42

PPY use the models to estimate working capital accruals, but the early recognition of future bad performance may be realised through non operating as well as operating accruals. For example, the standard Jones model could be adjusted to include dummy variables for $R < 0$.

$$ACC = b_0 + b_1 \cdot \Delta REV + b_2 \cdot PPE + b_3 \cdot DUM + b_4 \cdot DUM \cdot \Delta REV + b_5 \cdot DUM \cdot PPE$$

where

ACC = accruals

ΔREV = change in revenue

PPE = plant property & equipment

DUM = 1 when $R < 0$
= 0 otherwise

If conservatism operates through accruals, then some of the coefficients on the dummy variables will be negative.
