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The Feltham-Ohlson Framework: Implications for Empiricists*

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The Ohlson (1995) and Feltham and Ohlson (1995) studies stand among the most important developments in capital markets research in the last several years. The studies provide a foundation for redefining the appropriate objective of research on the relation between financial statement data and firm value. At the same time, they provide some structure for modeling in a field where structure has been sorely lacking.

The value of Ohlson (1995) and Feltham and Ohlson (1995) can best be appreciated when one recognizes where the studies fit on the evolutionary tree of research. These studies return to issues so basic as to render them direct descendants of work done no later than the 1960s (e.g., Edwards and Bell 1961; Modigliani and Miller 1958; Miller and Modigliani 1961; and Preinreich 1938). Ohlson (1995) and Feltham and Ohlson (1995) represent the base of a branch that capital markets research might have followed, but did not. Instead, framed within the so-called informational perspective, research since the late 1960s developed without much emphasis on the precise structure of the relation between accounting data and firm value. In a sense, Ohlson (1995) and Feltham and Ohlson (1995) return to "step one" and attempt to build a more solid foundation for further work. A fair evaluation of this work must consider that it is only a first step, not yet intended to represent a fully developed framework. Nevertheless, even in its embryonic state, the path laid down in Ohlson (1995) and Feltham and Ohlson (1995) offers some important and immediate contributions.

This discussion focuses on two of the ways in which Ohlson (1995) and Feltham and Ohlson (1995) can immediately affect our thinking. Both concern implications for empirical work. The first contribution,

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discussed previously by Penman (1992), involves a shift in what we consider the ultimate objective of research on the relation between accounting data and firm value—that is, research bearing on fundamental analysis. It leads us away from an emphasis on explaining stock price behavior and towards a focus on predicting future earnings and future growth in book value. The gains from this shift are ultimately an empirical issue, but evidence presented here is promising. The second contribution pertains to how we structure the relation between accounting data and firm value. Ohlson (1995) and Feltham and Ohlson (1995) provide an appropriate point of departure for nearly any empirical work on this relation. It is *only* a point of departure, no where near a complete structure, but then, getting off to the right start can be crucial.

On the appropriate objective of research on fundamental analysis

Fundamental analysis involves a study of a firm's current activities and prospects for purposes of estimating its value. The task involves assessments of factors (e.g., product demand, corporate strategy, industry outlook) that go well beyond accounting data. Nevertheless, interpretation of financial statement data is central to the task. Accounting research can enhance our understanding of fundamental analysis by clarifying the relation between financial statement data and firm value.

Very little prior research has been framed as a contribution to fundamental analysis; indeed, the very words *fundamental analysis* were out of vogue for years (Penman 1992). Nevertheless, a large fraction of capital markets research on the relation between stock prices and accounting data *could* be reframed as an attempt to enrich our understanding of fundamental analysis. Viewed from that perspective, the traditional research can then be contrasted with the approach supported by Ohlson (1995) and by Feltham and Ohlson (1995).

The traditional view on the objective of research on firm value and accounting data

Consider how the objective of research on firm value and financial statement data has been structured, at least implicitly. The traditional mainstream view starts with the recognition that, to estimate the value of the firm, one must forecast dividends. Thus, from the perspective of one interested in fundamental analysis, the research would appear to be appropriately structured as an attempt to forecast dividends, presumably with accounting data and other competing information sources. We are stymied, however, by the Modigliani-Miller dividend irrelevancy proposition: anything short of a dividend forecast over an infinite horizon is meaningless. This problem has been labeled by Penman (1992) as "the dividend conundrum."

The conundrum has traditionally been finessed. The key lay in the recognition that in an efficient market, the stock price reflects the present

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value of forecasted dividends, even over an infinite horizon. Thus, we are permitted to replace the most fundamental objective—the forecasting of future dividends—with an empirically more convenient objective—the explaining of current price. A useful by-product of this shift in objectives is that current price is unaffected by *ex post* deviations from expectations existing at the forecast date; such deviations would be a source of noise in a research design based on dividend predictions.

The research has been built, then, within a framework where stock price (or some other stock price base metric, such as abnormal returns) appears as a dependent variable with contemporaneous accounting data and other data treated as explanatory variables. The paradigm is one that can serve well if we are satisfied with a positive view of research where we seek only to discover what is already "known" in the marketplace about the relation between accounting data and firm value. However, it comes at a potentially important cost. Specifically, it precludes *from the outset* the possibility that researchers could ever discover something that was not already "known" by "the market."

An illustration of the cost of the traditional paradigm is revealed in a comparison of Lev and Thiagarajan (1993) with Abarbanell and Bushee (1994a, 1994b). Lev and Thiagarajan (1993) use the traditional approach to examine claims by analysts that certain factors beyond bottom-line earnings reveal information about firm value. One such factor is a *receivables buildup*. When receivables grow more quickly than sales, it is claimed by analysts to reveal "bad news" on average. Lev and Thiagarajan (1993) confirm the claim by showing that stock returns are negatively related to receivables buildups, after controlling for earnings and other factors.

Abarbanell and Bushee (1994a) test the analysts' claims not only in the traditional way, but also within the context of earnings prediction. They find that over their longest sample period, receivables buildups are *good news* with respect to future earnings. (One possibility is that such buildups are signals of increased customer demand in the last few days or weeks of the fiscal period.) Unless the result reflects sampling error, the evidence suggests that the analysts' views were, on average, simply wrong, and that "the market" was wrong in the same way.[1] That understanding could never have been generated through the traditional approach to research.

The prediction of earnings and book value as a research objective

Note that the key to the generation of the new understanding in Abarbanell and Bushee (1994a) was a shift in the objective of the research design from an explanation of current stock price behavior to a prediction of earnings. That, of course, is not a new idea. However, research has traditionally shunned earnings prediction as an objective.[2] One concern with the approach is that earnings are manipulable artifacts of arbitrary

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accounting choices. Thus, there is always the residual concern that, in predicting earnings, we are predicting something artificial, not real. Prices, on the other hand, seem real.

Ohlson (1995) presents us with the license to break with the traditional focus on explaining price behavior and to shift that focus to predicting earnings, as long as we do it "properly." The key lies in the following approximation. It states that the value of the firm can be well approximated *even over a finite horizon* by a function of forecasted earnings, book value, and discount rates. The only assumption required is that these forecasts be consistent with the clean surplus relation. We begin by defining a variable V_t^T as follows:

$$V_t^T = bv_t + \frac{(1+r)^T}{(1+r)^T - 1} \sum_{\tau=1}^{T} (1+r)^{-\tau} E_t[(x_{t+\tau} - r\, bv_{t+\tau-1}] \quad (1)$$

where bv_t = book value of equity at time t,
r = the discount rate, and
$x_{t+\tau}$ = earnings for period $t + \tau$.

Note that the amount V_t^T is a function of future earnings and book values measured over a *finite* horizon. However, despite the limited horizon, V_t^T approximates the value of the firm, so long as the horizon is "long enough"—an issue to which we will return momentarily.

$$V_t^T \longrightarrow P_t \text{ as } T \longrightarrow \infty \quad (2)$$

where P_t = the value of equity at time t (equal to price in an efficient market with expectations $E[\cdot]$).

Expressions (1) and (2) imply that the ability to predict earnings and book value—even over a finite horizon—is tantamount to the ability to approximate current value. It thus gives us license to reframe the objective of our research in terms of predicting future earnings and book value. It also supplies the specific functional form of future earnings and book value that should be the object of prediction. We *appear* to have skirted the dividend conundrum, and we have done so without introducing the circularity of understanding firm value only through reference to prices. We are, in fact, attacking the task in the same way the fundamental analyst must: by estimating value, using information independent of price.

The reader may detect what appears to be some sleight of hand here. Whether anything has been gained in our shift from dividend prediction, to price explanation, and then on to earnings prediction depends on the length of the horizon over which earnings must be predicted, that is, the magnitude of T in expressions (1) and (2). To emphasize how trivial the gain could be in the extreme, assume earnings of each period are equal to

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$9.00 plus some purely random number, until the firm's final period where earnings are whatever amount is necessary to reflect gains and losses on liquidation.[3] Then, the clean surplus relation can still hold, as well as expressions (1) and (2). Yet, we know that, short of a horizon that includes the entire life of the firm, forecasts of earnings and book value defined in this way will be useless for approximating value. In this extreme example, studying how to forecast earnings and book value would be entirely useless and would fail to skirt the dividend conundrum in any meaningful way.

Empirical evidence on forecasted accounting data as approximations of value

The usefulness of a research objective based on earnings prediction rests ultimately on an empirical question: over how long a horizon must earnings and book value be predicted in order to permit an accurate approximation of firm value? The answer to the question turns on what could be viewed as the "quality" of the accounting system: high quality accounting systems could be defined as those that reflect value over a shorter forecast horizon.

Table 1 reports some evidence that bears directly on the above empirical question. We entertain the possibility that value can be well described by earnings and book value forecasted over a horizon as short as four years. That is, we let $T = 4$:

$$V_t^4 = bv_t + \frac{(1+r)^4}{(1+r)^4-1} \sum_{\tau=1}^{4} (1+r)^{-\tau} E_t[(x_{t+\tau} - r\, bv_{t+\tau-1}] \tag{3}$$

If V_t^4 provides a good approximation of firm value, then we should be able to explain a large fraction of the variation in stock prices with the variables on the right-hand side of expression (3). This suggests the following regression:

$$P_{jt} = \alpha_0 + \alpha_1 bv_{jt} + \sum_{\tau=1}^{4} \alpha_{\tau+1} E_t[x_{jt+\tau} - r\, bv_{jt+\tau-1}] + \epsilon_t \tag{4}$$

In addition to ignoring abnormal earnings beyond year 4, equation (4) imposes two key restrictions. First, it assumes that discount rates (embedded in the coefficients $\alpha_{\tau+1}$) are constant across firms. Second, because the coefficient on book value (α_1) is constrained and because that coefficient reflects the degree of accounting conservatism (Feltham and Ohlson 1995), the specification assumes that conservatism is either constant across firms or completely reflected in the form of higher abnormal earnings within the forecast horizon.

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Table 1 presents estimates of equation (4), where Value Line forecasts are inserted for expectations at time t. We use the Value Line forecasts of one-year-ahead and two-year-ahead values and assume that their forecasts of three- to five-year-ahead values apply for year 4.

TABLE 1
Relation between stock prices and either forecasts of accounting numbers or dividends

Regression equations:

$$P_{jt} = \alpha_0 + \alpha_1 bv_{jt} + \sum_{\tau=1}^{4} \alpha_{\tau+1} E_t[x_{jt+\tau} - r\, bv_{jt+\tau-1}] + \epsilon_{jt} \quad \textbf{(A)}$$

$$P_t = \beta_0 + \sum_{\tau=1}^{4} \beta_{\tau+1} E_t[d_{t+\tau}] + \omega_{jt} \quad \textbf{(B)}$$

where P_{jt} = price per share of stock j at time t,
bv_{jt} = book value per share of stock j at time t,
r = the discount rate,
$x_{jt+\tau}$ = earnings per share for stock j in period $t + \tau$, and
$d_{jt+\tau}$ = dividends per share for stock j in period $t + \tau$.

			Exp. abnormal earnings			
	Intercept	Current book value	$\tau = 1$	$\tau = 2$	$\tau = 4$	Average R squared
(A)	5.82	1.04	3.18	1.58	6.15	.68
	(3.85)	(5.40)	(3.25)	(1.26)	(2.83)	
			Expected dividends			
			τ=1	τ=2	τ=4	
(B)	16.41	--	0.58	–3.64	20.67	.29
	(10.67)		(0.11)	(–0.45)	(3.23)	

Notes: The sample from each year, 1978–1993, is that subset (670 to 712) of December-year-end firms covered by Value Line for which required COMPUSTAT and the Center for Research in Security Prices (CRSP) data were available. Discount rate r is set to .13. Abnormal earnings and dividends for τ= 3 are not furnished by Value Line; exclusion of these variables should tend to bias upward the coefficients on expected abnormal earnings (dividends) of surrounding years. Ordinary least squares (OLS) regressions are estimated year-by-year in per share data. Coefficients reported are means across yearly estimates. T statistics are based on time-series standard deviation in coefficients and have been corrected for serial correlation, assuming the annual coefficients follow a first-order autoregressive process; the correction factor (from Abarbanell and Bernard 1994) is

$$\sqrt{[(1+\phi)/(1-\phi)] - [2\phi(1-\phi^n)/n(1-\phi)^2]}$$

where ϕ is the serial correlation in the coefficient, and n is the number of observations (15).

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Because we have no three-year-ahead forecasts, the coefficients on remaining variables that are correlated with the omitted three-year-ahead forecasts must be biased upward. In addition, the coefficients on abnormal earnings—especially over the longer horizons—will be influenced by the extent to which those regressors proxy for any abnormal earnings that are expected beyond four years but are omitted from the regression.[4] Precise coefficient values, however, are not a central concern for our purposes; at issue here is the overall explanatory power of the regressions. The key question is how well one can explain prices with only one book value number and three abnormal earnings forecasts.

The results indicate that, on average, the forecasted accounting variables explain 68 percent of the variation in price per share. Note that this relatively high degree of explanatory power is achieved despite the exclusion of three-year-ahead forecasts and with the assumptions that (1) discount rates are constant across firms, (2) accounting conservatism is constant across firms, (3) the Value Line forecasts fully reflect available information, and (4) the price per share is efficient with respect to that information.

Indeed, further evidence suggests that the failure to achieve 100 percent explanatory power can be blamed largely on the restrictiveness of the above assumptions, as opposed to a failure to forecast earnings over an infinite horizon. Consider a regression that includes the forecast of *price-to-book* premium at the end of four years in addition to the regressors in equation (4). Because that premium should reflect abnormal earnings beyond four years, that regression should achieve 100 percent explanatory power under assumptions (1) through (4). In fact, such a regression (not reported in the table) produces an average R squared of 80 percent. That we can approach this level of explanatory power so closely with only accounting data on the right-hand side is a strong testimony to the power of accounting data to reflect value well even over relatively short horizons. There is evidently little to be gained by forecasting earnings and book value beyond four years!

To gauge further the significance of the explanatory power of accounting numbers, consider what would be obtained if the price were expressed as a function of forecasted dividends over the next four years, rather than in terms of forecasted earnings and book value. Table 1 presents the results, again based on Value Line forecasts. The R squared is now only 29 percent. This result underscores the severity of the dividend conundrum; even though it must be dividends that ultimately drive firm value, dividends over a finite horizon are not very useful indicators of value. Earnings are much more useful.[5]

The evidence suggests that the approximation in expression (2) works well, at least when earnings and book values are measured as they are in the United States, even for horizons as short as four years. This view is

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consistent with valuation as practiced in investment banking; when valuations are based on discounted cash flows, the forecasts of cash flows are often hinged on earnings forecasts over a horizon of only five to seven years (Copeland, Koller, and Murrin 1990). The implication is that the prediction of earnings and book value, even over relatively short horizons, is as "worthy" a research objective as the explanation of price. The dividend conundrum has indeed been skirted effectively without resorting to the circularity involved in explaining price behavior.

Advantages and disadvantages of the shift in objectives

A shift to earnings prediction as an objective enables the researcher, barring sampling error, to discover what factors explain subsequent firm performance and, thus, current value. This is true of the traditional paradigm only if markets have already completely "discovered" the relations.

Another advantage of a shift in objective is that an earnings prediction exercise can be decomposed to reveal information about *how* or *why* an event or bit of data is useful in explaining the value of the firm. For example, Healy, Palepu, and Ruback (1992) offer evidence on which of several potential avenues (e.g., labor cost savings, increased operating efficiency, tax savings, etc.) are most important in explaining why mergers and acquisitions enhance shareholder value. The traditional research approach would simply have revealed that mergers and acquisitions increase the price of the combined entities without explaining how.

A primary disadvantage of a shift to earnings prediction is that the earnings contain "noise" resulting from the effect of events that could not be anticipated at the forecast date. A stock price study would not suffer from this weakness.

Another disadvantage is that, even though earnings may provide a useful reflection of value over a relatively short horizon in most situations, that is not always true. For example, one could not reasonably use earnings prediction to study the impact on firm value of changes in the market value of U.S. banks' investment portfolios, because, so long as the banks intend to hold and do hold the investments to maturity, earnings will *never* reflect that change in value. (The very accounting choice at issue here [whether to mark-to-market], itself, affects earnings and precludes the use of earnings as an object of prediction!) More commonly, earnings may not *yet* reflect the impact of an event, even though stock prices do. For example, at this point in history, it would be difficult to assess the reliability of alternative measures of environmental exposure through reference to associations with subsequent earnings impacts, because those impacts have for the most part not yet occurred. However, because stock prices should now reflect estimates of those future impacts, one could assess the reliability of various measures through examination of associations with stock prices—assuming that the stock market's estimates provide a sufficiently well-informed benchmark.[6]

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On structuring the relation between financial statement data and firm value

Traditional mainstream view

The mainstream view of the relation between firm value and financial statement data begins with reference to the relation between value (P_t) and future dividends ($d_{t+\tau}$):

$$P_t = \sum_{\tau=1}^{\infty} (1 + r)^{-\tau} E_t[d_{t+\tau}] \tag{5}$$

Note that the role of financial statement data lies outside the relation in equation (5). Beaver (1989) expresses the traditional view of the relation between financial statement data and firm value as consisting of three links. First, the current financial statement data must be linked to the future financial statement data. Second, the relation between the future financial statement data and future dividends must be specified. Finally, future dividends are related to current value as expressed in equation (5). Unfortunately, only the final link is well developed in the literature.

In the absence of a well-defined link between accounting data and firm value, empirical researchers have little guidance for model construction. Price changes could conceivably be related to earnings changes, and/or earnings levels, and/or the changes in various balance sheet accounts, and/or some balance sheet account minus a footnote disclosure—no relation is barred. It is not surprising that confusion has persisted for years, even about issues as basic as how we scale the data or whether we difference it.

The Feltham-Ohlson perspective

The Ohlson (1995) and Feltham and Ohlson (1995) studies provide a useful alternative to the traditional view, by linking future financial statement data *directly* to firm value, *without explicit reference to dividends.* Specifically, firm value is expressed as book value, plus discounted future expected abnormal earnings ($x_{t+\tau} - r\, bv_{t+\tau-1}$):

$$P_t = bv_t + \sum_{\tau=1}^{\infty} (1+r)^{-\tau} E_t[x_{t+\tau} - r\, bv_{t+\tau-1}] \tag{6}$$

The relation expressed in equation (6) is not new; it can be found in Preinreich (1938), and Edwards and Bell (1961).[7] In fact, it was used in a crude form by the Internal Revenue Service (IRS) as early as 1920 to estimate the impact of prohibition on the value of breweries.[8] Nevertheless, the direct link between future accounting numbers and current value seems to have been lost on the capital markets literature of the last 25

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years. To be sure, many studies develop a relation between prices and earnings (or future earnings), but these studies do so by starting with the dividend discount formula in equation (5) and then imposing an implausibly restrictive assumption about the relation between either earnings and dividends or earnings and cash flow. For example, Fama and Miller (1972) develop the price-earnings relation by assuming that earnings are equal to net operating cash flows. Beaver, Lambert, and Morse (1980) and Collins and Kothari (1989) assume dividends are proportional to earnings. Kormendi and Lipe (1987) assume that the present value of any change in expected cash flows is equal to the present value of the contemporaneous change in expected earnings.

Expression (6) reminds us that these restrictive assumptions are simply unnecessary. There is no need for any assumption about how earnings relate either to dividends or to cash flows, aside from the assumption of clean surplus. Beaver's three-step process is thus collapsed into two steps: the link between current information and forecasts of future financial statement data and the link between those forecasts and current value (that is, expression [6]). The first link is not easily developed (it is the essence of fundamental analysis), but that difficulty is unavoidable and must be confronted even under the traditional paradigm. Moreover—and this is the key point—once that link is developed, the remainder of the process *is* well defined, even without restrictive assumptions on dividend policy.

Readers might question what price has been paid for this relaxation of restrictions. The answer is almost nothing. So long as the analyst produces forecasts, such that, all future changes in book value arise either from earnings, capital contributions, or dividends, the relation in expression (6) holds, that is, the analyst must apply clean surplus accounting for future periods' forecasts. Even if the firm's current book value contains "dirty surplus," the relation in expression (6) will hold so long as *forecasted* changes in book value are faithful to the clean surplus relation.

There are no other assumptions required. For example, the relation in expression (6) does *not* assume any particular relation between accounting earnings and "economic earnings." It holds regardless of the (clean surplus) accounting methods used and even if book value and/or earnings are manipulated.[9]

The relation in expression (6) does *not* assume any of the Miller-Modigliani propositions, including dividend irrelevancy or capital structure irrelevancy. Such propositions play an important role in Ohlson (1995) and Feltham and Ohlson (1995), but are *not* required by (6).

The relation in expression (6) does *not* assume anything about the distribution of information among managers and investors. The value P_t can be viewed as the value estimated by whoever holds expectations $E_t[\cdot]$, and can differ across parties.

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The relation in expression (6) does *not* require any assumptions about the discount rate that are not already embedded in the dividend discount formula in expression (5), that is, even though Ohlson (1995) and Feltham and Ohlson (1995) are developed in a world of risk-free discount rates, one can substitute the cost of risky equity capital, so long as one is willing to accept the assumptions underlying the use of the same risky discount rate in expression (5). Alternatively, one can avoid those assumptions altogether, by computing a risk-adjusted earnings number and discounting that at the risk-free rate (Feltham and Ohlson 1994).

The relation in expression (6) does *not* assume any of the linear information dynamics in either Ohlson (1995) or Feltham and Ohlson (1995).

Usefulness of the Feltham-Ohlson view

Empirical modeling

One important application of the above view is as a point of departure for empirical work. It permits the development of a price-earnings relation that does not require implausible assumptions about the linkage between earnings and either dividends or cash flows. It also permits one to deduce the minimal assumptions implicitly invoked in existing empirical work.

To implement the relation in expression (6) in an empirical setting, it is still necessary to specify how observable data are used to form expectations about future abnormal earnings. This becomes the key step in the research design and, ultimately, the step that distinguishes one study from another. However, this step can be accomplished with assumptions much more plausible than those invoked in studies based on the dividend discount formula. For example, define financial assets as those that represent zero net present value projects, so that, only operating assets are expected to generate abnormal returns. Then, assume abnormal earnings exhibit reversion over time to a (possibly nonzero) mean. That is a sensible assumption in the face of competitive pressures and one that is consistent with evidence in Penman (1991) and Bernard (1994). More specifically, assume abnormal earnings follow a simple autoregressive process. This is restrictive, but good enough to capture the first-order effects of the behavior of abnormal earnings. These assumptions, when combined with the relation in expression (6), produce the following valuation model, which also appears in Feltham and Ohlson (1995):

$$Pt = bv_t + \alpha_1 ox_t^a + \alpha_2 oa_t + \epsilon_t \qquad (7)$$

where ox_t^a = abnormal operating earnings, and
oa_t = net book value of operating assets.

Here we have a well-defined structure that is expressed in terms of observables, yet we introduced no implausible assumptions and no assumptions at all about the dividend-earnings relation. Moreover, with

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the aid of the Feltham-Ohlson analysis, we have well-defined priors about what the coefficients in the model should be.

To appreciate the value of a model derived without restrictive assumptions, like the one found in expression (7), contrast it with the existing literature. A number of studies depend on empirical models, which have intuitive appeal, but which could only be derived from expression (6) after imposing overly restrictive or even convoluted assumptions. A common set of examples includes regressions of prices against components of book values with no proxy for expected abnormal earnings. In essence, such regressions implicitly assume that all firms are expected to return to a normal earnings level immediately. Note that even the common practice of including a proxy for expected earnings in such a regression–as opposed to expected *abnormal* earnings–can be motivated only by augmenting expression (6) with implausible assumptions.

Interpreting financial ratios

The relation in expression (6) provides a path to clearer thinking about the determinants of various financial ratios. For example, Penman (1993) relies on the relation in expression (6) to explicate the meaning of a price-earnings ratio and, in so doing, identifies a number of ways in which the literature on such ratios is confused. Penman (1991) and Bernard (1994) study the determinants of price-book ratios and their relative empirical importance.

Pedagogical use

The development of a direct linkage between accounting data and firm value also offers pedagogical advantages. For example, consider a class discussion that revolves around a valuation issue such as why a firm's price-earnings ratio is so high relative to the industry. Assume the discussion involves some accounting issues and, perhaps, even some attempt to adjust the accounting data to reflect "better" the firm's performance. If the accounting analysis is followed by an approach to valuation based on discounted cash flows (DCF), the valuation takes on the appearance of "undoing" the accounting that was just studied so carefully. Expression (6), in contrast, provides a vehicle for using forecasts of the accounting numbers *directly* —building directly on the accounting analysis, rather than appearing to "unravel" it. The approach highlights the connection between accounting numbers and estimates of value; DCF valuation emphasizes that there is no necessary connection.

Implications for practice

If the relation in expression (6) holds value as a pedagogical tool, then it should also be useful in practice. In fact, the relation in expression (6) is

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precisely what lies behind the Stern-Stewart Economic Value Added (EVA) valuation technique, which is rapidly gaining acceptance in practice (see Stewart 1991, especially Chapter 8). Of course, the valuations produced under the EVA approach must in principle be equal to those based on the discounted dividend formula. However, the approach frames the valuation exercise in a different way, one that Stewart (1991) argues is more useful for thinking about a business's "value drivers."

Concluding remarks

If the Ohlson (1995) and Feltham and Ohlson (1995) studies seem primitive, that primitiveness is by design. These studies adopt a "back to basics" approach—one that lays the groundwork for a research paradigm that represents an important alternative to the status quo. The Feltham-Ohlson approach relies on a "measurement perspective," as opposed to the "information perspective" of the traditional mainstream work. In so doing, it provides more structure than has been evident in prior work. It also offers a theoretical grounding for a movement away from price explanation as the dominant paradigm and toward research designs built around the prediction of fundamentals such as earnings.

The value of the Feltham-Ohlson framework will be more evident as it grows from its current embryonic state, and we observe how it influences our research and thinking. Even in its current state, however, the work has had an important impact. Feltham and Ohlson are not the only researchers providing an impetus for the current changes in capital markets research, but they are playing an essential role.

Endnotes

1 Abarbanell and Bushee (1994b) report that one could have earned abnormal returns by trading on publicly announced receivables data in a direction *opposite* to that suggested by the analysts' claims.

2 There are important exceptions to this focus on stock price explanation. For example, much of the work of Healy and Palepu has emphasized prediction of the fundamentals (e.g., earnings). See Healy and Palepu (1988) for a specific example.

3 I thank Jim McKeown for first raising this example with me in the context of the Ohlson model.

4 We obtain the largest coefficient on four-year-ahead abnormal earnings, suggesting that (as one might expect) the long-run earnings forecast provides the best proxy for earnings beyond four years.

5 This comparison assumes that Value Line analysts take as much care in forecasting dividends as they do in forecasting earnings and book value.

6 The approach requires that the market responds to the disclosures based on some assessment of the amount of noise contained therein. Thus, the value of the approach depends on the richness of information available about such noise. An approach based on earnings prediction, if feasible, would not rest on such conditions. See Barth and McNichols (1994) for an illustration of this approach and Holthausen (1994) for a further discussion of its advantages and shortcomings.

7 Note that, because equation (6) expresses value in terms of earnings over an infinite horizon, it can be used in empirical work only by introducing some assumptions (such as those reflected in expression [1]).

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8 See U.S. Treasury Department (1920) and the discussion, thereof, in Pratt (1986). I thank Merle Erickson of the University of Arizona for bringing this to my attention.

9 For example, if current book value is overstated, expected future earnings will be lower (to reflect the reversal of the overstatement), and the benchmark for normal earnings (that is, current book value) will be higher. The combination of these two effects leaves the current price unaffected if the analyst is aware of the manipulation. If the analyst is unaware, the estimated price will be inflated—as price must be under any valuation method when estimated on the basis of misleading information.

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