

**On Comparing Cash Flow and Accrual Accounting Models
For Use In Equity Valuation**

Stephen H. Penman
Graduate School of Business
612 Uris Hall
Columbia University
New York, NY 10027

(212) 854-9151; shp38@columbia.edu

August, 2001

Accepted by Gordon Richardson. The comments of Jim Ohlson, Stefan Reichelstein, Richard Sloan, and Theodore Sougiannis are appreciated.

On Comparing Cash Flow and Accrual Accounting Models For Use in Equity Valuation

Abstract

A claim is commonly made that cash flow and accrual accounting methods for valuing equities must always yield equivalent valuations. A recent paper by Lundholm and O'Keefe (2001), for example, claims that, because of this equivalence, there is nothing to be learned from empirical comparison of valuation models. So they dismiss recent research that has shown that accrual accounting residual income models and earnings capitalization models perform, over a range of conditions, better than cash flow or dividend discount models. This paper demonstrates, with examples, that the claim is misguided. Practice inevitably involves forecasting over finite, truncated horizons and the accounting specified in a model – cash versus accrual accounting in particular -- is pertinent to valuation with finite horizon forecasting. Indeed, the issue of choosing a valuation model is an issue of specifying pro forma accounting, and so, for finite horizon forecasts, one cannot be indifferent to the accounting.

Keywords Equity valuation; Dividend discounting; Discounted cash flow; Accrual accounting

On Comparing Cash Flow and Accrual Accounting Models for Use In Equity Valuation

1. Introduction

In a paper published in *Contemporary Accounting Research* (and earlier posted on www.ssrn.com), Lundholm and O'Keefe (2001) critique papers by Penman and Sougiannis (1998), Francis, Olsson and Oswald (2000), and Courteau, Kao, and Richardson (2001). This paper responds to that critique.

The three papers targeted by Lundholm and O'Keefe compare value estimates using alternative equity valuation models with actual traded prices. Penman and Sougiannis examine models that forecast dividends, cash flow, earnings or book values, and also compare models that capitalize forecasted earnings rather than discounting residual earnings. The Francis, Olsson, and Oswald paper is in similar vein but, whereas Penman and Sougiannis use ex post average attributes of these models in the tests, they use ex ante analysts' forecasts. Both papers recognize that valuations using different models are the same when forecasts are made for infinite periods, so their analyses focuses on how well the alternative models perform empirically for forecasts over finite horizons: if, as a practical matter, one were to forecast over one, two, five years ahead (for example), would one choose to forecast dividends, cash flows, or residual earnings? Going concerns are assumed to continue indefinitely, so in any truncation of the forecast horizon, standard procedure corrects for the truncation by calculating a continuing value at the horizon. So these papers also examine valuations with alternative ad hoc continuing value calculations for dividend, cash flow, earnings and book value forecasts. Courteau, Kao,

and Richardson focus on the error that is introduced by ad hoc specifications of continuing values.

Lundholm and O’Keefe not only critique these papers, they dismiss them, insisting that “there is nothing to be learned from an empirical comparison” of the models. The Lundholm and O’Keefe paper contains some misconceptions, not only about the issues in these papers, but also about accounting and valuation more generally. This note attempts to clear the muddied waters. Lundholm and O’Keefe state that their purpose is “to refute the commonly held belief that practical implementation issues create differences in theoretically equivalent RI (residual income) and CF (cash flow) models, and that these differences make empirical comparisons of the models worthwhile.” Implementation cannot create differences in theoretical models (of course), but practical issues do bear upon the choice of models for use in practice (of course). Indeed, while models must withstand the critique of sound theory, practice is the final arbiter of competing models. I show here that practical issues do indeed bear upon the choice of a valuation model and so, accordingly, tests of the utilitarian value of alternative models are appropriate.

2. Issues in Valuation Research

My response to the Lundholm and O’Keefe paper comes from a desire to point out a common misperception. It is a misperception that is at the heart of what accounting research (and particularly valuation research) is about.

Accounting is not a natural phenomenon. Rather accounting is by fiat, a man-made construction to satisfy specific purposes. Accordingly, accounting research is a utilitarian endeavor, it seeks to design accounting principles that enhance practice. One purpose of

financial statements is, presumably, to help analysts and the investors they serve understand what firms are worth. Therefore, an objective of accounting valuation research is to develop products that aid analysis.

Accordingly, researchers involved in “capital markets research” have typically viewed financial statements as providing information about firm value; to value firms, analysts have to forecast payoffs, and financial statements provide information that aids forecasting. Indeed, the U.S. Financial Accounting Standard Board’s Conceptual Framework sees the role of accounting as a predictor of future cash flows. There is, however, another role for accounting: analysts must specify what is to be forecasted to value firms. Should analysts forecast cash flows (as the FASB suggests), dividends, earnings, or something else? Stated differently, how does one account for the future? Should analysts account for the future in terms of the expected dividends to be paid? Should they model the firm in terms of the anticipated evolution of future cash flow statements? Or should they model future income statements and balance sheets? If the latter, how should earnings and book values be measured? Valuation models like discounted cash flow models, earnings capitalization models, and residual earnings models are specifications of alternative pro forma accounting systems for the future. The empirical papers on alternative valuation models bear upon the choice between alternative specifications of how to account in pro forma, for the future.

Characterizing the issue as one of alternative accounting is particularly pointed when choosing between discounted cash flow models and residual earnings models. It is well recognized (in Lücke 1955 and Feltham and Ohlson 1995, for example) that the discounted cash flow model is of the same form as the residual income model; only the

substance of the accounting differs. That is, the discounted cash flow model is just a special case of the residual income model with cash accounting for earnings and book value rather than accrual accounting. The choice is not between models but between the accounting within the model. Stated in the form of the residual income model, the discounted cash flow model specifies book value as net financial assets and “income” as free cash flow plus net cash interest. Introducing accrual accounting, the residual income model specifies net operating assets as well as net financial assets in the book value, and also specifies accrual operating income instead of free cash flow for “income.” (Penman 1997 lays out the comparison.) Indeed, the “residual income model” is only a skeleton to be fleshed out by specification of accounting principles. The residual income model permits cash accounting and any sort of clean-surplus accrual accounting – even Voodoo accounting.

The choice between cash accounting and accrual accounting is at the very heart of accounting research, for the difference involves issues of recognition and measurement that define an accounting system. The implication of the Lundholm and O’Keefe position is that accrual accounting does not matter: one can be cynical about the accounting used in valuation models and so can defer to cash flow models. Or to Voodoo accounting. Something has to give in our understanding of the issue to reject Voodoo accounting or to justify accrual accounting over cash accounting.

3. Point and Counterpoint

On three points there is no disagreement. But to each point there is a counterpoint that involves practical considerations, and it is these counterpoints that Lundholm and O'Keefe seem not to appreciate.

Infinite Horizon Valuation

Point

To the first point of agreement: for all models that require clean surplus accounting, valuations converge as the horizon over which forecasts are made increases, and these valuations converge to that from discounting expected dividends (see Lücke 1955, Peasnell 1982, and Ohlson 1995, for example). Or, as more commonly stated, valuations are equivalent for infinite forecasting horizons. So, with infinite-horizon forecasts, one can be cynical about the model, as Lundholm and O'Keefe recognize. Voodoo accounting works because with, with forecasting horizons long enough, one recovers the ultimate expected dividends and so undoes the poor accounting.

Counterpoint

As counterpoint, even though going concerns are considered to continue indefinitely, practical analysis typically deals with finite, truncated forecast horizons, presumably for reasons of bounded rationality. Modeling the firm for year 2050 is a daunting task. In the long run we are all dead. Analysts forecast for just a few years ahead and even their “long-run” forecasts usually cover only five years or less (and are often regarded as guess work). Analysts, we observe, forecast earnings, not cash flows. If I ask an analyst for a forecast to value a share, should I ask for an earnings forecast or a cash flow forecast, knowing that the forecast will be for only five years? That is, do I want the analyst to use

cash accounting or accrual accounting in the forecasts? Am I indifferent? This is the issue addressed in Penman and Sougiannis, as explicitly stated in their introduction.

Indeed, the need for finite-horizon forecasting is the rationale for entertaining alternative valuation models to the dividend discount model. If one were to forecast “to infinity,” one would forecast dividends, for dividends are, without controversy, the payoff to holding shares. One looks for alternatives to dividend discounting because forecasting dividends over a finite horizon is not very informative. That is, forecasting dividends for the next five (or ten) years typically does not indicate much about the ultimate dividends expected in the long run. The notion is capsulated in the Miller and Modigliani dividend irrelevance proposition, but one just has to think of Microsoft that “pays no dividends” (but does have stock repurchases) to understand that forecasting dividends in the near term is not a sensible thing to do. Dividends have to do with the distribution of value, not the generation of value, so one moves to an accounting that captures the value generation within a firm and so indicates the value that ultimately can be distributed as dividends.

Summarizing Infinite Horizon Forecasts with Continuing Values

Point

On a second point there also can be no disagreement. If, for any method, one adds to a finite-horizon forecast a continuing (or terminal) value that summarizes forecasts (to infinity) beyond the horizon, one obtains the same forecast and valuation as with an infinite horizon forecast (of course). For any valuation method, an infinite horizon forecast can be represented as a finite horizon forecast with an appropriate continuing value. And if alternative models (that are equivalent for infinite horizon forecasts) are so

stated, they yield equivalent valuations (of course). Lundholm and O’Keefe stress this point, and it is acknowledged in the introduction to Francis, Olsson, and Oswald (2000) and Courteau, Kao, and Richardson (2001).

Counterpoint

In counterpoint, reducing an infinite horizon forecast to a continuing value adds nothing from a practical point of view. The appropriate long-term growth rate for a continuing value calculation can only be verified by infinite-horizon forecasting, and it is infinite-horizon forecasting that is presumed to be the practical issue. Indeed, in practice, analysts (and students working class exercises) often apply an assumed growth rate (equal to average GDP growth, for example), in deference to the long-term forecasting problem. The practical issue is what accounting – cash accounting in discounted cash flow models or accrual accounting in so-called residual income models – best provides a base to which such a growth rate can be applied. If I forecast residual income for five years and then apply a three percent growth rate (for example), am I better served than forecasting cash flows for five years and applying a growth rate? So, as well as investigating valuations with truncated forecasting horizons, Penman and Sougiannis experiment with different ad hoc growth rates in continuing values. And Courteau, Kao, and Richardson explicitly examine the consequences of using ad hoc continuing values. This surely is worthwhile of empirical investigation.

Valuations Using a Full Set of Pro Forma Financial Statements

Point

There is no dispute on a third point. If one has modeled a full set of pro forma financial statements – balance sheet, income statement and cash flow statement – one

must get equivalent valuations (for long enough forecasting horizons) with discounted cash models and accrual accounting models. The balance sheet, income statement and cash statement are tied together by immutable accounting relations (provided that the statements are on a comprehensive income, clean surplus basis), so one model is a trivial restatement of the other. Accounting relations do not add information. Further, if for a finite forecast horizon, one forecasts a continuing value at the horizon, those same accounting relations imply a consistency in the way that the continuing values for different models are calculated. Lundholm and O’Keefe correctly stress this point, although the equivalences were already stated in the Penman (1997) synthesis paper. Indeed, some of the equivalences are stated in Peasnell (1982) and Brief and Lawson (1992). Recognizing the equivalences, Lundholm and O’Keefe then take the position that the issue of identifying appropriate valuation models with finite-horizon forecasting is moot.

Counterpoints

There are two counterpoints that bear on the Lundholm and O’Keefe position. *First*, the point on the equivalence of valuations comes with a proviso: for the equivalences to hold, one must not only develop a full set of pro forma financial statements, but the full set of financial statements must also be for a forecast period within which all attributes are in “steady state.” Equivalences can only be stated for steady-state conditions, and unfortunately the Lundholm and O’Keefe examples are restricted to conditions where steady state for alternative models is forecasted for the same point of time in the future. Penman (1997) adds the qualification and indeed points to Penman and Sougiannis for the empirical examination of the cases where steady-state points differ. *Second*, while one

can derive forecasts of dividends and cash flows from forecasted income statements and balance sheets, one cannot derive forecasts of earnings and residual earnings from forecasted cash flows. That is, one cannot construct forecasted income statements from forecasted cash flow statements without additional modeling of the accruals.

The last two counterpoints come to the heart of the matter. They are demonstrated below, first for the valuation of a savings account, then for equities.

4. Accounting and Valuation for a Savings Account

Following Lundholm and O’Keefe, I will demonstrate points and counterpoints with examples. As a device to teach valuation in the classroom, one starts with the simple savings account, for any valuation model must generalize to the savings account.

Consider an investment of \$100 in a savings account that is expected to earn at a rate of 10% each year. To value the account at date 0, the analyst produces the following pro forma for five years into the future:

Savings Account with Full Payout

Year	0	1	2	3	4	5
Book value	100	100	100	100	100	100
Earnings	10	10	10	10	10	10
Residual earnings		0	0	0	0	0
Dividends		10	10	10	10	10
Free cash flow		10	10	10	10	10

Expected residual earnings are zero because the assets are expected to earn at the required return of 10%. Earnings each period are paid out as dividends (withdrawals from

the account) and, as the investment is not leveraged with borrowing, dividends equal free cash flow. A number of equivalent valuations can be made:

Residual earnings valuation: Value = book value = 100

Dividend discount valuation: Value = $10/0.10 = 100$

Discounted cash flow valuation: Value = $10/0.10 = 100$

Capitalized earnings valuation: Value = $10/0.10 = 100$

This indeed is the example that Lundholm and O’Keefe use to make their point as to the equivalence of methods at the end of Section 2 of their paper. One could imagine the savings account as a going-concern investment (like a firm), so each valuation is really a continuing value calculated at time 0 with the expectation of how the expected value of each attribute will evolve over an infinite horizon. One could also calculate continuing values for each method at the end of each year in the future, and each would yield the same (present) value. The four different models give the same valuation, so one cannot conclude, given the pro forma, that one is superior to the other, for any forecast horizon.

Suppose, however, we were presented with the following forecasts for this savings account:

Savings Account with No Payout

Year	0	1	2	3	4	5
Book value	100	110	121	133.1	146.41	161.05
Earnings		10	11	12.1	13.31	14.64
Residual earnings	0	0	0	0	0	0
Dividends	0	0	0	0	0	0
Free cash flow	0	0	0	0	0	0

This is an account with no withdrawals, at least in the near term, so the analyst forecasts zero dividends and zero free cash flows (as earnings are reinvested in the book value). The residual earnings valuation and the capitalized earnings valuation yield a value of 100, but clearly dividend discount valuation and discounted cash flow valuation, for forecasts of five years or less, are problematical. If I were to ask an analyst to provide a five-year forecast, I would not be indifferent between the earnings (income statement) and book value (balance sheet) forecasts and the dividend and free cash flow (cash flow statement) forecasts.

The Lundholm and O'Keefe equivalence example is a special case of full payout and no reinvestment of earnings. They confuse necessary and sufficient conditions. Their example is frustrated by the counter example here. The pro forma with no payout is prepared in a way that is consistent with accounting relations between dividends, free cash flows, earnings and book values. Free cash flow equals operating income minus the change in the book value of operating assets and, as there is no debt, dividends equal free cash flow.

So (with respect to the first counterpoint on using a full set of pro forma financial statements in the Section 3 above) one can always forecast free cash flow and dividends simply by calculation given the accrual accounting income statements and balance sheets. Lundholm and O'Keefe recognize, correctly, that "it is true that net income and the change in shareholders' equity completely recover the dividend." But do the dividend and free cash flow forecasts, so recovered, help? Clearly not in the example here if the forecast horizon is five years: applying any growth rate to zero gives zero. What if the

forecasted dividends “recovered” were negative? (The example here is easy modified with forecasts of deposits into the account yielding forecasts of negative dividends and negative free cash flows.) Only by extending the forecast horizon to the point where payout is expected – and, indeed, steady state payout is expected – will the analyst capture the \$100 value from these forecasts. But the book value and earnings-based valuations require little forecasting.

Further (to the second counterpoint on using a full set of pro forma financial statements in Section 3 above), one can derive a (useless) forecast of dividends and free cash flow for this savings account from the forecasted earnings and book values, but, given only the forecast of free cash flow, one cannot construct forecasted earnings and book values. But it is these statements that yield the valuation! Imagine valuing a savings account if you did not know the book value or the earnings. Here we see accrual accounting working for practical valuation purposes. Choosing between cash flow or accrual accounting in pro forma matters with finite-horizon forecasting. Unlike dividends or cash flows, accrual accounting here gives an indication of the dividend that will ultimately be paid beyond the forecast horizon.

5. Cash Accounting and Accrual Accounting and the Valuation of Equities

The Penman and Sougiannis paper is simply a demonstration of these points for the valuation of equities rather than the savings account. With an appreciation of the difficulties of valuing a savings account without a report containing book value or earnings, there is little to be added as insight when moving to business firms and equities. Except, of course, that the accrual accounting for business firms might not (unlike the

savings account) be perfect (and usually is not). Indeed, the Penman and Sougiannis paper identifies situations where GAAP accrual accounting works relatively poorly. The residual income model adapts the valuation from book value – that works perfectly for a savings account – to the case where value is not equal to book value. Book value is the starting point, but a premium over book value is added by forecasting residual income. The recent paper by Ohlson and Juettner-Nauroth (2001) presents a model that takes capitalized forward earnings per share – that works perfectly for a savings account – as a starting point for equities, and adds value by forecasting abnormal earnings-per-share growth.

To be persuaded that the points made for the savings account apply to equities, consider the numbers for after-tax operating income, net operating assets (both accrual measures), free cash flows, and net dividends for Home Depot for fiscal years, 1997 – 2001 (in millions of dollars):

Home Depot Inc.

Year	1997	1998	1999	2000	2001
Operating income (OI)	941	1,129	1,585	2,323	2,565
Net operating assets (NOA)	6,722	8,333	10,248	12,993	16,419
Free cash flow (OI - Δ NOA)	(149)	(482)	(330)	(422)	(861)
Dividends paid	110	139	168	255	371
Share issues	104	122	167	267	351
Net dividends paid	4	17	1	(12)	20

OI and NOA numbers are from reformulated statements, and free cash flow is calculated by deduction rather than from cash flow statements. See Penman (2001, Chapters 9 and 10). Dividend and share issue numbers are from Home Depot's cash flow statements.

Home Depot is a case commonly used in financial statement analysis and valuation courses. Lundholm and O'Keefe use this firm to demonstrate their point. Suppose, however, that one were standing at the end of fiscal year 1996, attempting to make a forecast, and were offered a set of pro forma numbers for the five forward years, 1997-2001 with the guarantee that these numbers would be the actual reported numbers. And suppose one had to choose between the accrual accounting numbers (forecasted operating income and net operating assets) or cash flow numbers. The choice, as with the savings account, is clear. One can calculate free cash flow from forecasts of net operating assets, as indicated in the pro forma, but not vice versa. But the negative free cash flow forecast would pose a particularly difficult problem for calculating a continuing value at the end of 2001. And the net dividend is close to zero for these years, just like the savings accounting with no withdrawals. The GAAP accrual accounting numbers may not be the best accrual accounting for the purpose at hand, but operating income is forecasted to be positive, as is residual income under any reasonable estimate of the cost of capital. So the continuing value is less than 100% of the value, unlike that for discounting free cash flows. It is this point that Francis, Olsson and Oswald make when comparing the percentage of the valuation that is captured by finite horizon forecasts.

Home Depot is a particular case to illustrate a point. There are cases where alternative models will give the same valuation for the same forecast horizon, as laid out in the equivalences in Penman (1997). See also Penman 2001, Chapter 19, appendix. Indeed the case of generalized steady state to which Lundholm and O'Keefe restrict themselves is one such case.

6. The Concepts Behind Accrual Accounting

I have couched the issue as a matter of practical application. But conceptual issues are also involved. Why is it that difficulties arise in forecasting dividends and cash flows over finite horizons? Miller and Modigliani make the arguments as to why paying dividends is a zero net present value activity (tax issues aside). But free cash flow also suffers from conceptual problems. Free cash flow is, of course, cash flow from operations minus cash investment. Cash from operations is viewed as a positive valuation attribute. Cash investment is also a positive valuation attribute if the investment is positive net present value, yet investment reduces free cash flow. Free cash flow is a perverse valuation attribute, for firms reduce free cash flow when they invest to add value. Free cash flow is partially a liquidation concept, for firms increase cash flow by liquidating investments. Home Depot is, by all indications (including earnings relative to book value), a firm that has added value for shareholders, but it generates negative free cash flow. Of course, value-adding investment is expected to deliver positive free cash flow ultimately, but a forecaster must extend the forecast horizon to the long run to capture that flow.

It is understandable, then, that practitioners of discounted cash flow analysis, faced with the Home Depot situation, use operating income rather than free cash flows in continuing value calculations. Copeland, Koller, and Murrin (2000), after declaring that “cash is king,” do so (they call operating income NOPLAT, net operating profits less adjusted taxes). But, as demonstrated in Penman (1997), introduction of operating income into a continuing value converts the model to an accrual accounting model. Cash is king

in the sense that investors look for positive cash flows ultimately, but near-term cash flows may not be a good indicator of the long-term cash flows.

Accrual accounting, as least in principle, treats cash investment differently from cash accounting. Operating income under accrual accounting is,

$$\text{Operating Income} = \text{Free cash flow} + \text{Cash Investment} + \text{Accruals.}$$

The flow measure in accrual accounting, income, adds back investment to the troubling free cash flow and, in addition, recognizes accruals for value flows (like receivables) for which there is not a contemporaneous cash flow. Correspondingly, accrual accounting books the investment as a stock of value in the balance sheet (rather than a flow) and also recognizes the accruals in the balance sheet, such that

$$\text{Changes in Net Operating Assets} = \text{Cash Investment} + \text{Accruals}$$

This formulation, of course, is just Accounting 101, but it is good to remind ourselves what the accrual accounting is doing for the practical task of valuing firms. Not only are investments in the balance sheet rather than the income statement, but accruals (which change the timing of cash flows) are also incorporated. Lundholm and O’Keefe say that the idea that accrual accounting assists in valuation by bringing the recognition of value forward in time is a “misconception we want to refute.” The savings account and Home Depot examples would suggest that this timing notion of accrual accounting is not misconceived. (Indeed, Lundholm and O’Keefe’s demonstration that forecasted book value and earnings in the short term can equate expected infinite-horizon dividends negates their assertion.) Surely an analyst prefers, as a practical matter, an accounting that records an unbiased accrued pension liability rather than an accounting that requires forecasting cash pension benefits 30 years hence (or longer for steady state)? Penman and

Sougiannis look explicitly at the effect of accruals and their findings indicate that the answer is yes.

Of course reported pension liabilities may not be unbiased and, more generally, there is a question of the quality of accrual accounting. It is for this reason that GAAP accounting, because of its warts and all, is investigated in the three empirical papers. Indeed, Penman and Sougiannis show that valuation models based on GAAP accounting perform relatively poorly over finite horizons when GAAP accounting is closer to cash accounting (as it is for research and development investments, for example).

7. Errors in Implementation

Having argued at cross purposes to the empirical studies, Lundholm and O'Keefe attribute three "errors" to those studies: the "inconsistent forecast error," the "inconsistent discount rate error", and the "missing cash flows error."

Their point regarding the inconsistent forecast error is well taken. Continuing values at a horizon, T , should be calculated by applying growth rates to $T + 1$ forecasts, as equation 10 in Penman and Sougiannis indeed indicates. Further, given a full set of pro formas, accounting relations imply a consistency in the continuing values using different models, for the accounting in these models is tied by accounting relations. While the point is well to keep in mind in applications, it is misdirected to the empirical studies. Generalized steady state, the case that Lundholm and O'Keefe consider, is needed to demand consistency across models. The two counterpoints to the third point in Section 2

above (about working from a full set of pro forma financial statements) and the savings account and Home Depot examples, indicate the issue is moot for conditions other than generalized steady state, and for the accounting issues addressed by Penman and Sougiannis.

Lundholm and O’Keefe’s point regarding the discount rate applies standard corporate finance theory on the cost of capital. Unfortunately, despite the advances in theory, good estimates of the cost the cost of capital have proved elusive. Accounting-based valuation research is an innovation precisely because it focuses on the specification and forecasting of payoffs rather than the discounting of those payoffs (or “beta bashing” as students call it). In my view, forecasting payoffs are of first order. Agnostic about measures of the cost of capital, Penman and Sougiannis apply standard techniques and examine the sensitivity of their results to alternate estimates, a common expediency in empirical work. They do not, however, adjust for forecasted changes in the cost of capital, as theory directs. But it is beyond comprehension that their results could be explained by this refinement to beta bashing. Perspective is needed. Empiricists make what they deem to be reasonable tradeoffs in the face of measurement issues, and the onus is on the critic to demonstrate that results would change with a different judgment. The partitioning in the Penman and Sougiannis paper is designed to distinguish differences in the accounting for payoffs, the first-order issue, and the results over those partitions could not conceivably (in my mind) be due to risk estimation.

The missing cash flow error is a matter of maintaining clean-surplus accounting and reformulating financial statements appropriately into operating and financing and financing activities. These issues are important in valuating firms. But most dirty-surplus

income items under U.S. GAAP accounting have zero expected value. Again, it is unreasonable to color the interpretation of the results of the empirical studies with this attribution.

8. Conclusion

Lundholm and O’Keefe conclude their paper with the advice that “research efforts in valuation would be better spent on the study of how to make more accurate forecasts of financial statement data, not in how to represent and discount the resulting flows of value.” I couldn’t disagree more. A valuation model requires a specification of the accounting for the payoffs. Lundholm and O’Keefe, unintentionally, leave the impression that we can be cynical about that accounting, leaving accounting researchers with a reduced agenda. The perspective that I have laid out here is more positive. It directs us to think about what is good (and bad) accounting for valuation purposes. The empirical papers dismissed by Lundholm and O’Keefe provide evidence that GAAP accrual accounting has advantages over cash accounting. But GAAP accounting presumably is not the standard. In recognition of this, the partitioning in Penman and Sougiannis (1998) identifies cases where GAAP accounting performs relatively better (and worse). Many accounting issues remain, including the accounting for intangibles, the accounting for stock compensation (GAAP does a poor job), transparency in reported GAAP, the quality of reported GAAP earnings, and the tradeoff between relevance and reliability. These issues are resolved as a matter of design for practical analysis.

To the matter of the research agenda, more theory is surely needed. While the empirical papers provide some evidence, theory has not given us much in terms of

prescription of accounting principles except clean-surplus accounting and, in Ohlson (1995), the dividend displacement property (which, in Penman and Sougiannis 1997, is evident in GAAP accounting). Accrual accounting principles are on the agenda in the theory of performance measurement (see, for example, Dutta and Reichelstein 1999), and there are some characterizations of accrual accounting systems in a valuation context (in Feltham and Ohlson 1995 and Ohlson and Zhang 1998, for example), but considerable work needs to be done.

References

- Brief, R., and R. Lawson. 1992. The role of the accounting rate of return in financial statement analysis. *The Accounting Review* 67 (April): 411-426.
- Copeland, T., T. Koller, and J. Murrin. 2000. *Valuation: Measuring and Managing the Value of Companies*, 3rd ed. New York: John Wiley & Sons.
- Courteau, L., J. Kao, and G. Richardson. 2001. Equity valuation employing the ideal versus ad hoc terminal value expressions. *Contemporary Accounting Research* (Winter).
- Dutta, S., and S. Reichelstein. 1999. Asset valuation and performance measurement in a dynamic agency model. *Review of Accounting Studies* 4 (3/4): 235-258.
- Feltham, G., and J. Ohlson. 1995. Valuation and clean surplus accounting for operating and financial decisions. *Contemporary Accounting Research* 11 (Spring): 689-731.
- Francis, J., P. Olsson, and D. Oswald. 2000. Comparing the accuracy and explainability of dividend, free cash flow, and abnormal earnings equity value estimates. *Journal of Accounting Research* 38 (Spring): 45-70.
- Lücke, W. 1955. Investitionsrechnung auf der Grundlage von Ausgaben oder Kosten? *Zeitschrift für Betriebswirtschaftliche Forschung*, 310-324.
- Lundholm, R., and T. O'Keefe. Reconciling value estimates from the discounted cash flow model and the residual income model. *Contemporary Accounting Research* 18 (Summer): 311-335.
- Ohlson, J. 1995. Earnings, book values, and dividends in equity valuation. *Contemporary Accounting Research* 11 (Spring): 661-687.

- Ohlson, J., and B. Juettner-Nauroth. 2001. Expected EPS and EPS growth as determinants of value. Working paper, Stern School of Business, New York University.
- Ohlson, J., and X-J. Zhang. 1998. Accrual accounting and equity valuation. *Journal of Accounting Research* 36 (Supplement): 85-111.
- Peasnell, K. 1982. Some formal connections between economic values and yields and Accounting numbers. *Journal of Business Finance and Accounting* 9 (Autumn): 361-381.
- Penman, S. 1997. A synthesis of equity valuation techniques and the terminal value calculation for the dividend discount model. *Review of Accounting Studies* 2 (4): 303-323.
- Penman, S. 2001. *Financial Statement Analysis and Security Valuation*. New York: McGraw-Hill/Irwin.
- Penman, S., and T. Sougiannis. 1997. The dividend displacement property and the substitution of anticipated earnings for dividends in equity valuation. *The Accounting Review* 72 (January): 1-21.
- Penman, S. and T. Sougiannis. 1998. A comparison of dividend, cash flow, and earnings approaches to equity valuation. *Contemporary Accounting Research* 15 (Fall): 343-383.