What Matters in Company Valuation: Earnings, Residual Earnings, Dividends? - Theory and Evidence

Stephen H. Penman

Columbia Business School
Columbia University
New York

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The recent period of speculative valuations has taught us once again that company valuations must be anchored on the fundamentals. During the stock market bubble, an increasing variety of stock valuation methods were offered to value companies of the "new economy." Traditional methods receded into the background. Indeed, commentators insisted that traditional financial analysis, developed for the Industrial Age, is of little use in the Information Age where value comes from intangible assets that are not on companies' balance sheets.

I disagree with those commentators, and am delighted that the title under which you have asked me to speak presumes that fundamental analysis is appropriate. I, for one, was frustrated during the bubble by the pretence of identifying and valuing assets like "knowledge assets", structural assets", "network externalities", and the like. These constructs are useful for understanding the strategies and technologies by which firms add value but, without further analysis that brings more concreteness to these vague notions, they can lead to speculative valuations. Indeed, they are speculative concepts, a presupposition that value exists.

A fundamental analyst insists that, for an (intangible) asset to have value, it must produce earnings. "Buy earnings" is the mantra. New Age analysts of the late 1990s suggested that "earnings don't matter". As it turns out, the earnings – or rather losses – reported during the bubble were a good predictor of outcomes for dot.com firms. But are earnings the fundamental on which we should focus? The title of my talk suggests that dividends as an alternative. Some analysts focus on cash flows, distrusting earnings. In

the last ten years, alternative earnings concepts like “comprehensive income”, “residual income,” and “abnormal earnings” have been advanced. There have been more references to book value. In addition to the profusion of new age techniques, an increasing number of fundamental attributes have been advanced. This requires some sorting out. What matters in company valuation?

My conclusion is that earnings should indeed be the focus. However, we must be very careful in buying earnings, for one can pay too much for earnings. Buying earnings requires a disciplined approach to avoid the risk of paying too much for earnings.

Do Dividends Matter?

The answer to our question would seem to be straightforward: dividends are what investors get from holding shares, so valuation should be based on the dividends that a company is expected to pay. The Dividend Discount Model formalizes the idea; the value of an equity share in a firm is equal to the present value (at time 0) of expected dividends (Div) to be paid in each period in the future:

$$Value_0 = \frac{Div_1}{\tilde{n}^1} + \frac{Div_2}{\tilde{n}^2} + \frac{Div_3}{\tilde{n}^3} + \frac{Div_4}{\tilde{n}^4} + \ldots$$

$$= \frac{Div_1}{\tilde{n}^1} + \frac{Div_2}{\tilde{n}^2} + \frac{Div_3}{\tilde{n}^3} + \frac{Div_4}{\tilde{n}^4} + \ldots \frac{Div_T}{\tilde{n}^T} + \frac{Price_T}{\tilde{n}^T}$$

The discount rate here, ñ is one plus the required rate of return for equity.

For going concerns, dividends have to be forecasted into the indefinite future (as indicated by the continuation, …., in the formula. Herein lies a practical problem. Many

firms pay no dividends, nor are they expected to do so in the immediate future. So one has to forecast the dividends they might ultimately pay far into the "long run". But, in the long run we are all dead. Microsoft does not pay dividends. Forecasting the dividends that Microsoft might pay from 2050 onwards is a daunting task. In any case, investors realize that the cash flows they will receive will be in the form of dividends up to some time, T, in the future, plus cash from selling the share at its price at that time, Price_T (as stated in the second formula). But this does not help us. To assess the value of the share at time 0, we have to forecast its price at T: the valuation is circular.

The fact is that dividends represent the distribution of value, not the generation of value. Dividend payout, short of the liquidating dividend, does not have much to do with the value of a company (tax effects aside), and going concerns do not pay liquidating dividends. This, of course, restates the Miller and Modigliani dividend irrelevance idea. In terms of the dividend discount model, a change in expected dividends up to a point T in the future reduces the expected price at which share will trade at that time, Price_T by the same present value amount that leaves Value_0 unchanged: changes in expected dividends are zero net present value.

We are left with the *dividend conundrum*: the value of a share is, conceptually, based on the expected dividends from holding shares, but forecasting dividends (for going concerns) does not give the value. The lesson tells us that we must go inside the firm and look at something to do with the generation of value. There is also a second lesson. For practical valuation, we want to avoid forecasting attributes that will only materialize in the very long run. Equity investing is speculative enough, and the long run is all the more speculative. Better to work with some attribute that materializes over the

short run, for we can bring information to bear on the near future and so develop valuations about which we feel more secure.

The Valuation of a Saving Account

At the risk of being too simple, I will demonstrate some of the principles of valuation with a simple savings account. Consider the pro forma for an account with a current book value (at time 0) of 100 euros, earning at a rate of 5%, with withdrawals of all earnings (full payout). The required return for the asset is, of course, 5%.

A Savings Account with Full Payout

	0	1	2	3	4	5
Earnings		5	5	5	5	5
Dividends		5	5	5	5	5
Free Cash Flows		5	5	5	5	5
Book Value	100	100	100	100	100	100

Required Return = 5%

The pro forma is given for only five years here, but the account is to continue indefinitely as a "going concern", like a company. We understand that the value of this account is 100 (but might have trouble explaining why). Four types of valuations work in this case:

Present value of dividends :

$$Value_0 = \frac{5}{1.05} + \frac{5}{1.05^2} + \frac{5}{1.05^3} + \longrightarrow = \frac{5}{0.05} = 100$$

Present value of free cash flow :

$$Value_0 = \frac{5}{0.05}$$

Anchor on book value :

$$Value_0 = 100$$

Anchor on forward earnings :

$$Value_0 = \frac{5}{0.05} = 100$$

The first valuation, dividend discounting, works here: capitalizing expected year-ahead dividend as a perpetuity gives the same valuation as discounting an infinite stream to present value. Dividends are equal to free cash flow here (as it the case for any asset with no borrowing involved), so the second valuation that capitalizes free cash flow as a perpetuity also works. The value of 100 is equal to book value (the price-to-book ratio is 1.0), and the value of 100 can also be calculated by capitalizing expected forward earnings (one year ahead) of 5 euros, rather than by capitalizing dividends. For the last two valuations, I have used the word "anchor" deliberately. The question of what matters in valuation is a question of what we wish to anchor our valuation to. Rather than anchoring the valuation to dividends (or free cash flow), we can think of anchoring the valuation on book value or earnings.

The valuation of this savings account would suggest that any of the four methods works. But look now at the following savings account.

A Savings Account with No Payout

	0	1	2	3	4	5
Earnings		5.00	5.25	5.51	5.79	6.08
Dividends		0	0	0	0	0
Free Cash Flows		0	0	0	0	0
Book Value	100	105.00	110.25	115.76	121.16	127.63

Required Return = 5%

This account differs from the first only in its dividend payout. Earnings are retained, so earnings and book value grow, but dividends and free cash flows are now expected to be zero. Without forecasting the liquidating dividend, dividend discounting will not work. Nor will discounted cash flow methods work. But the book value of 100 or the forward earnings of 5 still delivers a valuation of 100. We have found something to anchor on other than dividends or cash flows. Book value and earnings matter for a savings account. What matters for business firms?

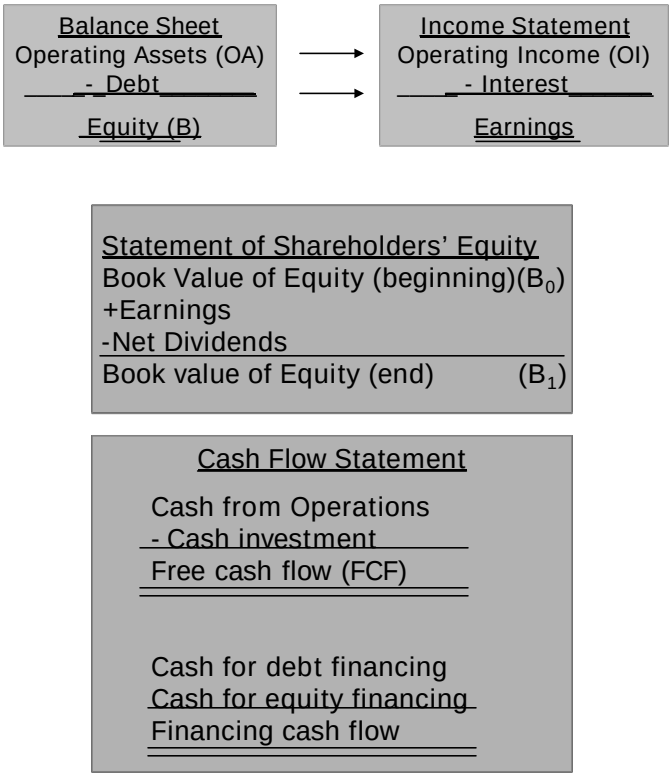
You may respond to these observations by pointing out that, while a savings account might not pay dividends, one can always forecast the expected dividends that could be paid at any point in the future (say at the end of year 5) by forecasting the book value from which dividends could be paid (127.63 euros at the end of year 5), and discounting that amount to present value (100 euros). You have made a good point, and it is an important point: because dividends are irrelevant, one has to do some accounting. Indeed, valuation involves accounting for future book values and the earnings that grow book values, as I will show. Valuation is a matter of accounting for the future. Further, current book value is essential. The task of forecasting future book values would elusive if one did not have the current book value. Indeed, valuing a savings account without

accounting numbers (bank statements) is a difficult task indeed. There is a reason why is it called an account!

Do Cash Flows Matter?

I hope that I have convinced you that dividends are not the fundamental that matters for valuation. But the dismissal of discounted cash flow (DCF) methods may seem a little rash. After all, the DCF method is a standard valuation technique. I hope to convince you that cash flows, like dividends, are concerned with the distribution of value rather than the generation of value.

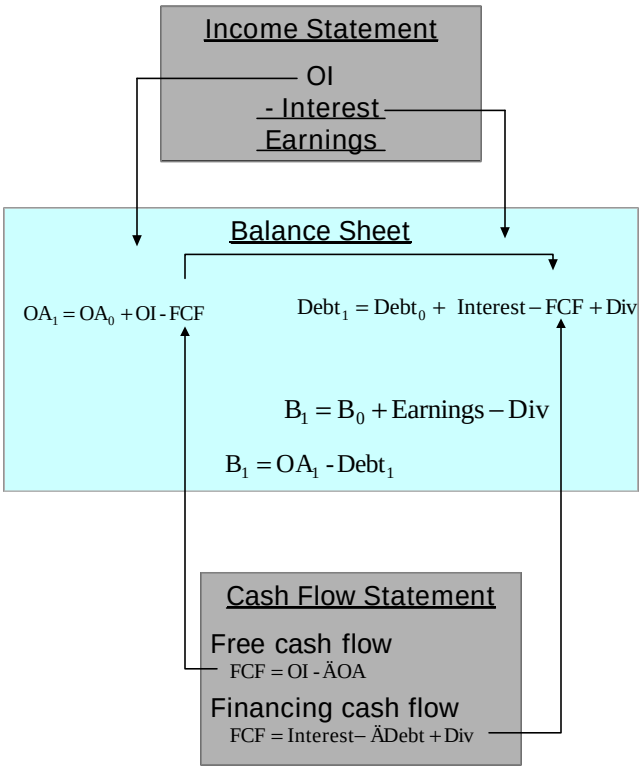
Firms raise funds from shareholders and debtholders (financing activities), invest these funds in business assets to trade with customers (operating activities), then return cash flow from operating activities back to shareholders and debtholders (the culmination of financing activities). Below are the four financial statements, presented in such a way as to distinguish those items in the statements that have to do with financing activities from those that involve operating activities.



You can view operating assets as being net operating assets (that is, net of operating liabilities) and debt as being net debt (that is, debt less any interest-bearing financial assets). Similarly, dividends are net cash to shareholders, that is, cash dividends plus cash paid out in share repurchases minus cash from share issues.

The financial statements tie together according to fixed accounting relations. Some relations (like equity = operating assets – debt, and earnings = operating income – interest) are relations that tie items together within a statement. But other accounting relations "articulate" the statements to each other. The following diagram lays out how the income statement, the balance sheet and the cash flow statement articulate.[1]

[1] My book, Penman, S., *Financial Statement Analysis and Security Valuation* (New York: McGraw-Hill Companies, 2001) shows how this formulation of the financial statements is employed in analysis and valuation. It also elaborates on many of the points made in this paper.



The income statement and the cash flow statement explain changes in particular aspects of the balance sheet. Operating income increases operating assets, and free cash flow reduces these assets. The interest component of the income statement increases indebtedness but free cash flow, net of cash paid to shareholders (net dividends), reduces indebtedness. These accounting relations are always true, provided earnings are comprehensive (clean-surplus) income, as in the depiction of the statement of shareholders' equity above (where there is no dirty-surplus "other comprehensive income" in the statement that is not included in earnings).

Focus on free cash flow in this accounting system. The change in shareholders' equity is equal to (comprehensive) earnings less net dividends, as in the first line below. But (as equity = operating assets – debt) the change in equity is also explained by the change in operating assets minus the change in debt. The equation market (1) below is the

accounting relation (in the diagram) describing how changes in operating assets are accounted for. Equation (2) describes the change in debt (again in the diagram). The change in book value of equity is determined by equation (1) minus equation (2). In that subtraction, free cash flows drop out. Earnings increase book value, but free cash flow is irrelevant to the calculation of equity. So, if we were to forecast future book value as an indication of future dividends, free cash flows would not be of interest. Free cash flows, are in fact, a dividends from the operating activities to the financing activities. They represent a distribution from the value generated by operations, not a measure of the value generated.

	$Date_0$							$Date_1$
	B_0	+	$Earnings_1$		-	Div_1	=	B_1
	↓		↓			↓		↓
(1)	OA_0	+	OI_1	$- FCF_1$			=	OA_1
(2)	$Debt_0$	+	$Interest_1$	$- FCF_1$	+	Div_1	=	$Debt_1$
(1)-(2)	B_0	+	$OI_1 - Interest_1$	+ O	-	Div_1	=	B_1

Anchoring Value in the Financial Statements

We develop a generic approach to specifying the accounting numbers we might anchor on.[2] In so doing, we illustrate why free cash flow might not be a desirable valuation attribute. Call the number y, and let y_0, y_1, y_2, … be a sequence of specified

[2] This formulation is used by Ohlson and Juettner-Nauroth to develop the abnormal earnings growth model below. The presentation here appropriates the formulation to specify other valuation models.

accounting numbers, starting at the current date with y_0. The first equation below is an equality that holds for any y. The second value equation is the dividend discount model:

$$0 = y_0 + \frac{y_1 - ry_0}{r} + \frac{y_2 - ry_1}{r^2} + \frac{y_3 - ry_2}{r^3} + \cdots$$

$$provided\ that \frac{y_T}{r^T} \longrightarrow 0\ as\ T \longrightarrow \infty$$

$$Value_0 = \frac{Div_1}{r} + \frac{Div_2}{r^2} + \frac{Div_3}{r^3} + \cdots$$

Adding these two equations, we get a valuation model in terms of expected dividends and the y sequence:

$$Value_0 = y_0 + \frac{y_1 + Div_1 - ry_0}{r} + \frac{y_2 + Div_2 - ry_1}{r^2} + \frac{y_3 + Div_3 - ry_2}{r^3} + ...$$

This is a valuation model, anchored on y_0, but with the accounting for y unspecified. The premium that the equity is worth over y_0, $Value_0 - y_0$, is given by the remaining terms that have to be forecasted. Note that the setup ensures that valuation with any specified y series is always equal to the value that one would obtain from forecasting dividends for the long run.

Debt as an Anchor: *Discounted Cash Flow Analysis*

Specify a firm's net debt as the anchor so that y_0 = - debt at time 0 (the current debt) and y_1 = - expected debt level one year ahead:

$$
\begin{aligned}
y_0 &= -\text{Debt}_0 \\
\text{Premium}_0 &= \text{Value}_0 + -\text{Debt}_0 \\
y_1 + \text{Div}_1 - \tilde{n}y_0 &= -\text{Debt}_1 + \tilde{n}\text{Debt}_0 + \text{Div}_1 \\
&= -\text{Debt}_1 + \text{Debt}_0 + \text{Interest}_1 + \text{Div}_1 \\
&= -\ddot{A}\text{Debt}_1 + \text{Interest}_1 + \text{Div}_1 \\
&= \text{Free Cash Flow}_1
\end{aligned}
$$

This calculation merely relies on the fixed accounting relation that governs the evolution of a firm's indebtedness.[3] The calculation says that, by anchoring on debt, we must forecast free cash flow to complete the valuation. With a similar calculation for subsequent years,

$$Value_0 = -Debt + \frac{FCF_1}{r^1} + \frac{FCF_2}{r^2} + \frac{FCF_3}{r^3} + \cdots$$

This is, of course, the discounted cash flow model. A point has been demonstrated: discounted cash flow involves anchoring equity value on the debt. Why would one do this, given that value is generated by the operations and the value of the operations (in principle) have little to do with the way they are financed? Also, with debt entering negatively, there is a big premium to plug for. That premium is estimated by forecasting free cash flows. But is this a worthwhile thing to do if we have short-term forecasting in mind?

[3] In the derivation, I have denoted the required return on debt as the same as the required return on equity, so ρDebt_0 is one plus the expected interest on Debt at date 0. This is merely to keep the presentation simple. Modifications incorporating differences between the two rates can be made.

The following free cash flow numbers for two very successful U.S. retailers, Home Depot and Wal-Mart are illuminating:

***Home Depot, Inc*.**

	1999	**2000**	**2001**
Cash from operations	1894	2439	2977
Cash investment	2273	2620	3521
Free cash flow	(379)	(181)	(544)

Wal-Mart Stores, Inc.

	1994	**1995**	**1996**
Cash from operations	2195	2906	2383
Cash investment	4486	3792	3332
Free cash flow	(2291)	(886)	(949)

These firms have been very successful, but have generated negative free cash flows over long periods. The reason is clear: while they generate considerable cash from operations, they invest cash in new stores in excess of the amount of cash generated from operations. This is common for growing firms. If one were standing at the beginning of 1999 and were trying to value Home Depot on the basis of the negative free cash flows for the following three years here, one would have quite a task to justify the considerable (positive) price as which these successful firms trade.

The truth is that free cash flow is not a value added concept. Indeed, it is a perverse value-added concept. Investment is made to generate value but it reduces free

cash flow! Free cash flow is a liquidation concept, for firms increase free cash flow by liquidating assets. Perverse indeed.

Book Value as an Anchor

If equity is being valued, it seems sensible to anchor on the book value of the equity rather than the debt. So, set y_0 = book value at time zero, B_0, and y_1 = book value one year ahead, B_1:

$$\begin{aligned} y_0 &= B_0 \\ \text{Premium}_0 &= \text{Value}_0 - B_0 \\ y_1 + \text{Div}_1 - \tilde{n}y_0 &= B_1 + \text{Div}_1 - \tilde{n}B_0 \\ &= \text{Earnings}_1 - (\tilde{n} - 1)B_0 \\ &= \text{Residual Earnings} \end{aligned}$$

Residual earnings, the amount to be forecasted is comprehensive earnings less the required earnings from charging the beginning-of-period book value with the required return. By anchoring on book value, the analyst forecasts residual earnings (RE) to calculate the premium over book value. The residual income model formalizes the valuation:

$$Value = B_0 + \frac{RE_1}{\tilde{n}} + \frac{RE_2}{\tilde{n}^2} + \frac{RE_3}{\tilde{n}^3} + \cdots$$

Residual earnings (or residual income) can be expressed in another way:

$$\begin{aligned}\text{Residual Earnings}_t &= \text{Earnings}_t - (\tilde{n}-1)B_{t-1}\\ &= \left[\frac{\text{Earnings}_t}{B_{t-1}} - (\tilde{n}-1)\right]\times B_{t-1}\\ &= [\text{ROE}_t - \text{required return}]\times B_{t-1}\end{aligned}$$

That is, residual earnings is determined by the rate of return on (the book value of) equity (ROE) relative to the required rate, and by the amount of book value (net assets) in place. Accordingly, firms add value to book value by increasing the rate of return on equity and by increasing investment.

Earnings as an Anchor

Book values (in the balance sheet) are the stock of net assets employed. Earnings (in the income statement) are the flows from book value. Flows are converted to stocks by capitalizing them. To anchor on earnings, set y_0 equal to capitalized forward earnings:

$$y_0 = \frac{\text{Earnings}_1}{\tilde{n}-1} \qquad \text{(Forward capitalized earnings)}$$

$$\text{Premium}_0 = \text{Value}_0 - \frac{\text{Earnings}_1}{\tilde{n}-1}$$

$$\begin{aligned}\frac{\text{Value}_0}{\text{Earnings}_1} &= \frac{1}{\tilde{n}-1} + \frac{\text{Premium}}{\text{Earnings}_1}\\ &= \text{Forward P/E ratio}\end{aligned}$$

$$\begin{aligned}y_1 + \text{Div}_1 - \tilde{n}y_0 &= \frac{\text{Earnings}_2}{\tilde{n}-1} + \text{Div}_1 - \frac{\tilde{n}\text{Earnings}_1}{\tilde{n}-1}\\ &= \frac{\text{Earnings}_2 + (\tilde{n}-1)\text{Div}_1 - \tilde{n}\text{Earnings}_1}{\tilde{n}-1}\\ &= \text{Capitalized abnormal earnings growth}\end{aligned}$$

Thus, if one anchors the valuation in capitalized earnings, one completes the valuation by forecasting abnormal earnings growth and (as it, too, is a flow that has to be converted to a stock of value), capitalizing abnormal earnings growth at the required rate of return

The corresponding valuation model that forecasts abnormal earnings growth (AEG) is due to Ohlson and Juettner-Nauroth:[4]

$$Value_0 = \frac{1}{r-1}\left[Earnings_1 + \frac{AEG_2}{r} + \frac{AEG_3}{r^2} + \frac{AEG_4}{r^3} + \cdots\right]$$

To understand how this valuation works, one of course must understand the AEG measure. Abnormal earnings growth (AEG) in any period, t is

$$AEG_t = Earnings_t + (\tilde{n} - 1)Div_{t-1} - \tilde{n}Earnings_{t-1}$$

AEG for year t has two components. First, there is earnings for year t, equal to the firm's earnings for year t plus the earnings from reinvesting dividends paid in the previous year (the $Earnings_t + (\tilde{n} - 1)Div_{t-1}$ part of AEG). This cum-dividend earnings number recognizes that a firm provides two sources of earnings, the earnings that it reports plus earnings from reinvesting dividends that it pays. Second, the cum-dividend earnings is charged for growth in earnings from the prior year at a rate equal to the required return (the $-\tilde{n}Earnings_{t-1}$ part of AEG). Accordingly, if one expects cum-dividend earnings to grow at a rate equal to the required return, AEG = 0, and the forward P/E is $1/(\tilde{n} - 1)$.

[4] See J.A. Ohlson and B.E. Juettner-Nauroth, "Expected EPS and EPS Growth as Determinants of Value," unpublished paper, New York University, 2001.

One pays more than 1/(ñ – 1) times forward earnings only if one can forecast abnormal earnings growth, that is, growth at a rate greater than the required return. So, if the required return is 10%, one pay more than 10 time forward earnings only if one expects cum-dividend earnings to grow at a rate greater than 10%.

Back to the Savings Account

A valuation method that works for equities must work for a savings account. Dividend discounting and cash flow discounting do not work for equities when we have near-term forecasts in mind, nor do they work for a savings account. Do residual earnings and abnormal earnings growth valuations work for a savings account? The following embellishes the pro formas for the no-payout and zero-payout savings accounts.

	0	1	2	3	4	5
No Payout:						
Earnings		5	5.25	5.51	5.79	6.08
Dividends		0	0	0	0	0
Free Cash Flows		0	0	0	0	0
Book Value	100	105	110.25	115.76	121.16	127.63
ROE		5%	5%	5%	5%	5%
Residual Earnings		0	0	0	0	0
Cum-dividend earnings growth rate		5%	5%	5%	5%	5%
Abnormal earnings growth		0	0	0	0	0
Full Payout						
Earnings		5	5	5	5	5
Dividends		5	5	5	5	5
Cum-dividend earnings		5	5.25	5.51	5.79	6.08
Free Cash Flows		5	5	5	5	5
Book Value	100	100	100	100	100	100
ROE		5%	5%	5%	5%	5%
Residual Earnings		0	0	0	0	0
Cum-dividend earnings growth rate		5%	5%	5%	5%	5%
Abnormal earnings growth		0	0	0	0	0

For both accounts, value is equal to the book value of 100. Following the logic of the residual earnings models, this is because we expect the rate of return on book value (5%, as indicated) to be equal to the required return. That is, residual earnings are always expected to be zero; accordingly, the asset must be worth its book value.

For both accounts, the value of 100 euros is also equal to forward earnings (of 5 euros) capitalized at the required rate of return of 5%. This is because abnormal cum-dividend earnings growth after he forward year is expected to grow at a rate equal to the 5% required return. This is easy to see in the no-payout case. But, even though earnings within the full-payout account are not expected to grow at all, the growth rate is 5% once the earnings from reinvesting dividends are recognized: for the full-payout account, earnings the account holder earns in year 2 are the 5 euros earned in the account for that year plus 0.25 euros from reinvesting the 5 euro withdrawal in year 1 in another account earning at 5%, and so for subsequent years.

The two valuation methods advocated for equities work for a savings account. Note that neither valuation depends on the dividend payout from the savings account, nor the free cash flow. Dividends and free cash flow do not matter in company valuation. What matters is residual earnings and abnormal earnings growth. Focusing on residual earnings and abnormal earnings growth is equivalent to anchoring valuations on book value or on capitalized earnings.[5]

[5] For further discussion, see Penman, S.,"A Synthesis of Equity Valuation Techniques and the Terminal Value Calculation for the Dividend Discount Model," *Review of Accounting Studies* 2 (1997), 303-323 and Penman, S., "On Comparing Cash Flow and Accrual Accounting Models for Use in Equity Valuation,"*Contemporary Accounting Research* 18 (Winter 2001), 681-692.

Protection from Paying Too Much for Earnings

The valuation methods laid out here do not target earnings per se, but rather residual earnings and abnormal earnings growth. Herein lies a lesson. Investors buy earnings but they must be careful in paying too much for earnings. Analysts trumpet earnings growth, but must be careful in overpricing earnings growth. Firms can deliver earnings growth that does not add value. The two methods protect the investor from paying too much for earnings.

Firms deliver earnings growth that does not add value in two ways. First, earnings can grow simply because of new investment, but investment does not necessarily add value. Think of serial acquirers like Tyco and WorldCom in the United States. These companies certainly grew earnings during the late 1990s, and so became darlings of Wall Street. But they did so largely by acquisitions of other firms. Acquisitions at fair value grow earnings, but they do not add value. Paying too much an acquisition (as empire builders do) destroys value, but can add earnings. An analyst who does not distinguish earnings that adds value from earnings that does not is in danger of paying too much for a share.

Second, earnings growth can be created by manipulating the accounting, and pure accounting does not add value. In the 1990s, many U.S. firms took large restructuring charges and other write-downs to assets. These charges reduce current earnings, of course, but result in higher future earnings: write-downs of inventories result in lower cost of good sold in subsequent years and fixed assets write-downs result in lower depreciation expense. All the more so if the firm overestimates there charges and so has to "bleed back" the charge to earnings in a later period. Some of the reported earnings in

the U.S. were manufactured in this way, yet the stock market priced the earnings at high multiples.

Both valuation methods here protect the investor from buying earnings from investments that do not create value. The residual earnings model charges earnings from new investment with the required return on investment: new investment adds earnings but only adds value if it adds earnings in excess of the required return on the additional book value from the investment. The abnormal earnings growth model charges earnings growth for normal earnings growth: earnings growth only adds value if the growth is in excess of the required rate of growth.

Both methods also protect from paying for earnings created by the accounting. Future earnings cannot be created without writing down current book values. Write-downs create future earnings and residual earnings, but the residual earnings model includes the book value as well as forecasted earnings. The effect of higher expected residual earnings is exactly offset by lower book values from the write-down, to leave the value (book value plus the present value of expected residual earnings) unaffected. The investor is protected. The abnormal earnings growth model functions in a similar way.

Empirical Evidence

How do the two models that anchor on book values and earnings fare when compared with actual traded prices? Both modes give the same valuation, so I will make the comparison to share prices for just one of them, the residual earnings model. With book value as the anchor, and market price as a measure of value,

$$\text{Price}_t = \text{Book Value}_t + \text{Premium}_t$$

Hence, the change in price over a period is

$$P_t - P_{t-1} = \text{Change in Book Value}_t + \text{Change in Premium}_t$$

$$= \text{Earnings}_t - \text{Div}_t + \text{Change in Premium}_t$$

(This uses the accounting relation for the change in the book value equity.) Deflating both sides by P_{t-1}, a regression equation of the following form can be estimated:

$$\frac{P_t - P_{t-1}}{P_{t-1}} = a + b_1 \frac{eps_t}{P_{t-1}} + b_2 \frac{dps_t}{P_{t-1}} + e_t$$

The change in premium is in the disturbance term. I have estimated this regression equation for all U.S firms annually from 1964 to 2000. The average estimated coefficients and t-statistics on those coefficients are:

$$b_1 = 1.68$$
$$t(b_1) = 7.22$$
$$b_2 = -3.14$$
$$t(b_2) = -5.49$$

The coefficient on earnings is positive; the market prices earnings positively: earnings matter for company valuation. The coefficient on dividends is negative: dividends are not a valuation attribute. Indeed, dividends reduce value. They are the distribution of value, not the generation of value. The stock market recognizes that earnings add value and dividends reduce value in the firm.

A similar regression can be estimated to see how the market values free cash flows. Free cash flows are produced by the operations. The value of the operation is equal

to the value of the equity plus the value of the debt and the market value of equity and debt are usually readily available. As with the value the equity,

$$\text{Price of Operations}_t = \text{Book value of Operating Assets}_t + \text{Premium}_t$$

The change in this price over a period is

$$P_t - P_{t-1} = \text{Change in Book Value of Operations}_t + \text{Change in Premium}_t$$

$$= \text{Operating Income}_t - \text{Free Cash Flow}_t + \text{Change in Premium}_t$$

(This uses the accounting relation for the change on operating assets above). P is now the price of the operations. Again deflating both sides by P_{t-1}, the following regression equation in specified:

$$\frac{P_t - P_{t-1}}{P_{t-1}} = a + b_1 \frac{OI_t}{P_{t-1}} + b_2 \frac{FCF_t}{P_{t-1}} + e_t$$

The average coefficient estimates and t-statistics are:

$$b_1 = 1.87$$
$$t(b_1) = 11.19$$
$$b_2 = -1.10$$
$$t(b_2) = -21.46$$

Operating income is valued positively, but free cash is valued negatively. Indeed, the coefficient on free cash flow is close to –1.0: a dollar of free cash flow implies a dollar less of value in the operations. Free cash flow is really a dividend, that is, a dividend from the operating activities to the financing activities. Free cash flow is concerned with the distribution of value (from the operations), not the generation of value.

The table below summarizes valuation errors from valuing U.S. firms using discounted cash flow (DCF) methods and residual earnings (RE) methods. The valuations are done each year from the cash flows, earnings, and book values that firms actually reported over the following five years. So the valuations are done with perfect foresight: if I knew what the relevant forecasted numbers were (for sure), which method would yield the lowest valuation error relative to the current market price? The valuation error is (actual price – model price)/actual price. The table gives average errors for portfolios of stocks ranked on their current free cash flow.

			Valuation Error	
Portfolio	**FCF/Price**	**E/P**	**DCF**	**RE**
1	-1.851	0.000	1.98	0.07
2	-0.505	0.068	2.12	0.11
3	-0.311	0.077	1.60	0.22
4	-0.216	0.084	1.45	0.21
5	-0.153	0.083	1.13	0.27
6	-0.107	0.078	1.12	0.19
7	-0.071	0.079	1.29	0.16
8	-0.042	0.080	0.99	0.20
9	-0.019	0.077	0.91	0.28
10	0.000	0.079	0.61	0.25
11	0.015	0.078	-0.17	0.18
12	0.030	0.085	0.59	0.13
13	0.047	0.089	0.38	0.12
14	0.067	0.095	-0.08	-0.06
15	0.094	0.100	-0.21	-0.09
16	0.128	0.104	0.02	-0.11
17	0.181	0.105	0.41	-0.11
18	0.271	0.096	-0.42	-0.15
19	0.400	0.065	0.30	-0.23
20	2.697	-0.178	2.24	-0.07

The table shows that median free cash flow-to-price is zero, compared with a median E/P ratio of 7.9%. The valuation errors for residual earnings valuation are considerably less

than those for DCF valuation, the more so for firms with free cash flow away from the median.[6]

Conclusion

The valuation attributes examined here – dividends, cash flows, earnings, and book values – yield the same valuation if they are forecasted for the very long run. But in the long run we are all dead. Valuations differ for finite horizon forecasts, and the issue is which attribute, forecasted over the short run, gives the best indication of value to be delivered in the long. I suggest that dividends and free cash flows are not related to the value generation, so they do not inform about the long run. They are more concerned with the distribution of value. Earnings and book values, in contrast, are the result of an accounting that attempts to measure value added in a business.

Analysts forecast earnings in their equity research reports, not dividends or cash flows. This is so for very good reasons. My Wal-Mart and Home Depot examples indicate that an investor would prefer an earnings forecast to a cash flow forecast for these firms. Earnings is calculated to remedy the problems of free cash flow:

Earnings = Free cash flow + investment + accruals – net interest

Earnings calculations add back investment to free cash flow and place investment on the balance sheet. We have seen that this is desirable because it is the negative effect of investment on free cash flow that is objectionable from a value-added perspective.

[6] For a more thorough empirical examination, see Penman, S. and Sougiannis, T., "A Comparison of Dividends, Cash Flow and Earnings Approaches to Equity Valuation," *Contemporary Accounting Research* (Fall 1998), 343-383.

Earnings also recognizes non-cash accruals, and so adds value even if there is no cash flow.

Much lies beneath the surface here. A good measure of earnings relies on the integrity of the accruals so that the issue of the quality of the accounting must always be dealt with. Expensing research and development (R&D) expenditures is poor quality accounting because it uses cash accounting – investments are expensed – and correspondingly valuation is more difficult for R&D firms. Accruals can be biased. Indeed, we might think of "good" and "bad" accounting in terms of how it facilitates equity valuation, for valuation is essentially a matter of accounting for earnings and book values. Earnings and book values matter in company valuation.