

Residual Income Valuation: The Problems

by

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Abstract

This paper identifies problems related to RIV in an equity valuation context. Three problems are discussed. First, on a per share basis clean surplus will not generally hold if there are expected changes in shares outstanding; this aspect eliminates a necessary condition for the RIV-formula to be valid. Second, an all equity approach does not work if the firm plans to bring in "new" shareholders who derive a net benefit from their capital contributions. Third, GAAP violates clean surplus because some capital contributions are not accounted for in market value terms. As an alternative to RIV, the paper shows that it makes more economic/accounting sense to focus on expected eps, adjusted for dps, as a valuation attribute instead of current book value and expected residual earnings.

I. Introduction and Summary

Even a cursory review of the accounting literature for the past 5 years will show that residual income valuation (RIV) has been propelled into prominence. RIV appears to have also entered classrooms and text books on a grand scale. This broad importance of RIV points toward the need for a careful evaluation of its applicability. Though the standard mathematics that equates RIV and PVED poses no problems, it would be presumptive to dismiss conceptual and practical issues. The literature has spelled out how GAAP violates clean surplus, primarily because of Foreign Currency Translations and Unrealized Gains on Held-for-Sale Marketable Securities. It has also been suggested that RIV remains valid as long as the dirty surplus items are zero in expectation.¹ While the last observation seems relevant as well as reasonable, a more systematic treatment of RIV's applicability is currently missing.

This paper identifies circumstances under which RIV determines equity value. Though we disregard the well-known problem/solution related to the dirty surplus items, aspects related to GAAP will be considered. The core of the discussion, however, deals with conceptual issues related to RIV. In the course of this analysis a more subtle question will emerge: Is it the case that an accounting based valuation approach naturally leads to clean surplus and RIV?

The major points of the paper are as follows:

- The concept that value equals the present value of expected dividends derives fundamentally from a per share perspective. To equate RIV and PVED therefore requires that clean surplus holds on a per share basis. But this clean surplus restriction on a per share basis will *almost never* be met when the number of shares outstanding

changes.

- A total (dollar) value perspective on RIV works only if (i) issuing and buying shares are value-irrelevant transactions (i.e., irrelevant in the sense of MM), and (ii) GAAP measures capital contributions (distributions) correctly, i.e., per market values.² Though condition (i) may be reasonably approximated in the real world, condition (ii) is clearly violated as one can exemplify by the accounting for pooling-of-interest acquisitions and potentially dilutive securities. Hence the per share problem cannot be finessed by moving to a total dollar value perspective.
- The mathematical procedure which one exploits to equate RIV and PVED is sufficiently general to allow for accounting based valuation formulae other than RIV. Competing valuation approaches need not introduce book values and a clean surplus relation. One formula of particular interest focuses on expected eps, adjusted for dividends per share, and growth. The economic and accounting content of this valuation approach is no less appealing than RIV.

In view of the above points, future research based on RIV ought to consider its inherent limitations. Moreover, there are logical alternatives to RIV which avoid most, if not all, of its inherent problems.

II. Basics: The PVED Formula

Accountants interest in RIV stems from its purported equivalence to PVED. The latter formula

is virtually always taken as a starting point in valuation theory. However, the PVED concept itself is somewhat ambiguous: Should it be expressed on a per share basis, an all-equity dollar basis, or do both approaches work? The answer to such a question is, of course, ultimately a matter of what assumptions one makes. Nevertheless, one can reasonably state the following: The per share perspective provides the natural starting point.

To appreciate the last statement, note that PVED derives from the idea of investments in equity securities being a fair game. Specifically, an investor who buys one share of a stock can expect a fixed expected return of $E_t \left[\left(\tilde{P}_{t+1} + d\tilde{p}s_{t+1} \right) / P_t \right] = R$, regardless of the date t information. In this expression, the P_t 's and dps_t are on a per share basis (and, thus, $d\tilde{p}s_{t+1} \geq 0$ for sure). It is implicitly assumed that risk and risk-free rates are held constant over time so that R requires no subscript 't'. Via recursive substitution, it now follows that

$$P_t = \sum_{t=1}^{\infty} R^{-t} E_t \left[d\tilde{p}s_{t+t} \right] \quad (*)$$

and where we stress that both sides of the equation are on a per share basis (adjusted for stock splits). Conversely, note that (*) implies $E_t \left[\left(\tilde{P}_{t+1} + d\tilde{p}s_{t+1} \right) / P_t \right] = R$. In other words, the PVED formula must be expressed on per share basis if one maintains the traditional dividend-adjusted "random walk hypotheses". Neglecting issues related to changes in risk and interest rates, theoretical finance always relies on this modeling when expectations are homogenous.

While the above ideas are well-known and straightforward, the same cannot be said if one considers the validity of PVED from the perspective of an *all-equity* basis. On a trite level, one extends

(*) by simply assuming that the number of shares outstanding never changes beyond date $t=0$. One can further argue that this possibility may be relevant because it could be a firm's expected investment and financing policy. A more sophisticated argument obtains if one removes the assumption that dividends per share must be positive. If the firm operates like a proprietorship, then the owner can "tax" himself and there would be no reason for the firm to issue or buy back shares. Neither case is of any practical interest. Professional equity analysts and accounting researchers alike are primarily concerned with publicly traded corporations, which frequently change the number of shares outstanding. These changes tend to be particularly material when transactions relate to mergers and acquisitions.

One can potentially validate the all-equity approach to PVED by placing additional restrictions on the economic environment. The two scenarios considered, though somewhat contrived, suggest that PVED on an all-equity basis will obtain if one invokes appropriate MM-conditions. A subsequent section discusses these somewhat delicate issues. Before undertaking this task, it helps to understand the implications of the per share perspective on PVED as it affects RIV.

III. Per Share Accounting and Clean Surplus

It goes almost without saying that the change in book value per share (*bvps*) will differ from earnings per share (*eps*) minus dividends per share (*dps*). In the absence of potentially dilutive securities, and, of course, assuming clean surplus in total dollar amounts, the only exceptions are (i) number of shares outstanding does not change, or, (ii), issue price per share equals *bvps* at that date. Neither exception is of any practical interest, even if one adds the qualifier "in expectation". With

respect to (i), many firms announce plans to engage in acquisitions and capital structure changes or, as another example, maintain share repurchase programs to support the stock price. And (ii) makes no sense given that price to book ratios generally exceed 1 by several multiples. It follows PVED and RIV can differ if one defines residual earnings per share (reps) as

$$reps_t \equiv eps_t - r \times bvps_{t-1},$$

and where $r \equiv (R - 1)$ denotes the discount/cost-of-capital rate. To be sure, the lack of equivalence between PVED and RIV occurs even if one restricts transactions to 12/31.

It is particularly easy to see why clean surplus on a per share basis does not apply if there are zero earnings and dividends and the firm issues shares 12/31. Now the book value per share will increase if $P_t > bvps_t$ (or decrease if $P_t < bvps_t$), in spite of clean surplus requiring that there should be no change. The increase in bvps perhaps suggests that the pre-existing shareholders are better off if bvps is “value-relevant”. But, more generally, to interpret (expected) changes in bvps due to stock transactions as profit/losses attributable to pre-existing shareholders makes no economic sense if one assumes rational markets. And in a world with conservative accounting it makes even less sense. These observations, simple as they are, seem discouraging as to the usefulness/applicability of RIV.

No clean surplus on a per share basis can, of course, be finessed by “redefining” either of the two the accounting variables. The two schemes are as follows:

- (i) Define

$$\hat{eps}_t \equiv \Delta bvps_t + dps_t.$$

Hence, \hat{eps}_t will not generally equal eps_t , even if clean surplus holds on a total dollar basis. As a

further complication, $bvps_t$ may be ambiguous if there are dilutive securities outstanding (GAAP does not prescribe how one determines $bvps$, in sharp contrast to eps). But this is a separate issue.

Approach (i) merely stems from the unconventional precept that within a per share context eps should be viewed as a "plug" derived from the change in $bvps$ adjusted for dividends per share. By doing so one includes gains/losses that current shareholders "realize" due to changes in shares outstanding.

(ii) Recursively, define

$$bv\hat{p}s_t \equiv bv\hat{p}s_{t-1} + eps_t - dps_t \quad \text{with the initialization } bv\hat{p}s_0 \equiv bvps_0 .$$

In this case eps_t will be GAAP earnings (presumably on a diluted basis), whereas book value per share will be the "plug" (given the initialization condition). One can perhaps interpret $(bvps_t - bv\hat{p}s_t) \times$ (number of shares outstanding at date t) as measuring the cumulative dollar earnings "realized" by "new" (or "formerly old") shareholders due to changes in shares outstanding. Put mildly, this kind of accounting is unorthodox.

Does either of the two approaches make more sense in a RIV context? This question cannot be answered unless one introduces concepts of accounting beyond the pure mechanics of clean surplus.

The well-known statement that RIV "works for all accounting principles satisfying clean surplus" suggests that the analysis lacks an important ingredient. It would help if one could resort to some characterization(s) as to how one chooses among alternative scheme/rules which determine $bvps$ and eps . Perhaps one could then eliminate either of the two approaches. But such a query leads to more basic questions: Do we really need to introduce $bvps$ at all in accounting based valuation? Can not forecasted eps alone complement dps in accounting based valuation? Section V resolves the questions;

the details of the answers will show why and how we can dismiss book values and the clean surplus relation from accounting based valuation.

IV. PVED on an All-Equity Basis

It is instructive to consider why framing the analysis on an all-equity basis does not avoid substantive problems. At first glance it may seem that clean surplus on an all-equity basis must equate PVED and RIV. Though the claim is mathematically indisputable, one still must address whether PVED determines the total market value of equity. The 'D' in PVED now includes capital contributions and, as previous analysis indicates, these require careful handling. The problem associated with changes in shares outstanding will now have a different manifestation; it will not go away.

A simple example illustrates the problem with an all-equity approach. Assume the following

- (a) Regular cash dividends are declared and paid on a per share basis every 12/31. Let $dps_t \geq 0$ denote these dividends.
- (b) The current date is 1/1 and $t=0$. Only one share is outstanding. One year later the firm plans to issue k new shares at a price of p^* . These two variables are random from a date $t=0$ perspective. To keep matters simple, but without any substantive loss of generality, there will be no subsequent change in shares outstanding.

Total dividends net of capital contribution equal

$$t = 1 : dps_t - k \times p^*$$

$$t \geq 2 : dps_t + k \times dps_t = (1 + k) \times dps_t$$

One can next evaluate PVED on a total basis and define it as V_0 .

$$V_0 \equiv \sum_{t=1}^{\infty} R^{-t} E_0 [d\tilde{p}s_t] \\ + \left\{ \sum_{t=2}^{\infty} R^{-t} E_0 [\tilde{k} d\tilde{p}s_t] - R^{-1} E_0 [\tilde{k} \tilde{p}^*] \right\}$$

Given the PVED-formula on a per share basis, i.e., equation (*), it now follows that $V_0 = P_0$ if and only if the expression inside { } equals zero. But the latter means that the issuing of shares is neutral from the perspective of the "new" shareholders. They are clearly indifferent. The "old" shareholders may or may not be indifferent since the anticipated transaction can affect the sequence of expected per share dividends. This possibility raises questions that go beyond the model. Why should the "old" shareholders allow the "new" shareholders to pick up any surplus or conversely? Clearly the benchmark has to be that, ex ante, the transaction is neutral for old and new shareholders alike. In other words, MM applies.

Since the PVED-formula on a per share basis cannot be avoided without MM, one may want to argue that MM (in expectation) is a reasonable approximation as a practical matter.³ However, even if one grants this possibility, or even equates market (intrinsic) value to V_0 for any other reason, significant problems remain. The V_0 formula requires that one measures dividends net of capital contributions in terms of market values at the dates when the transactions occur; this follows because dividends and capital contribution represent consumption and foregone consumption, respectively. However, GAAP violates clean surplus in the sense that

Earnings - Δ Book Value \neq Market Value of Dividends Net of Capital Contributions.

Two kinds of capital contributions are the major culprits.

1. Pooling-of-interest accounting.
2. The accounting for potentially dilutive securities when converted to common shares.

Pooling-of-interest transactions cannot be viewed as rare, and the difference between market and book values for such transactions are typically very material. Any application of RIV - - whether on a per share or all-equity basis - - makes no sense in the anticipation of pooling-of-interest accounting transactions. Pro forma fundamental investment analysis can in principle avoid the problem by use of purchase accounting in the projected financial statements. With respect to empirical research based on GAAP and on an ex post, all-equity, residual earnings, it must be recognized that the underlying accounting rules cause significant problems.⁴

Dilutive securities are common but typically not material, with the possible exception of compensation options within certain industries (especially within the so-called "new" economy). Fully diluted eps provides some relief from this problem in practice, but one must of course keep in mind that this accounting is of no relevance here. On an all-equity basis, GAAP for options and RIV run at cross-purposes.

V. A Machinery for Accounting Based Valuations

RIV's conceptual fragility, combined with a non-cooperative GAAP, makes it worthwhile to

pursue alternative valuation approaches.⁵ A general question arises as to how one can introduce anticipated realizations of accounting data in a valuation framework without violating PVED on a per share basis. To address the question, it helps if one first carefully examines the mathematics that equates PVED and RIV on a per share basis. Given the "right" mathematics, it will be easy to see why the starting point in valuation, bv_0 , is as arbitrary as clean surplus is of little or no interest.

The scheme that yields RIV and PVED equivalence is almost embarrassingly simplistic. To develop this point, consider the following mathematical equality: Let $\{y_t\}_{t=0}^{\infty}$ be any sequence of numbers that satisfy $R^{-t}y_t \rightarrow 0$ as $t \rightarrow \infty$; then

$$0 = y_0 + R^{-1}(y_1 - Ry_0) + R^{-2}(y_2 - Ry_1) + \dots$$

It follows immediately that

$$P_0 = y_0 + \sum_{t=1}^{\infty} R^{-t}z_t \tag{**}$$

where

$$z_t \equiv y_t + \bar{d}ps_t - Ry_{t-1}$$

and $\bar{d}ps_t \equiv E_0[\bar{d}ps_t]$.

Armed with the expression (**), nothing stops us from putting $y_0 = bvps_0$ and $y_t = bv\bar{p}s_t$, $t \geq 1$, so that $z_t = E_0[bv\bar{p}s_t + \bar{d}ps_t - Rbv\bar{p}s_{t-1}]$. Of course, z_t will also equal residual earnings if additionally $eps_t = \Delta bvps_t + dps_t$. But since the latter is not generally true, it makes more

sense to say:

define $\hat{e}ps_t \equiv \Delta bvps_t + dps_t$ and define $re\hat{p}s_t \equiv \hat{e}ps_t - r \times bvps_{t-1}$, so that $z_t = E_0 [re\tilde{p}s_t]$. These

steps take us back to approach (i) in Section III with its obvious lack of intuitive appeal. Do we really want clean surplus to hold on a per share basis and include "gains and losses" due to expected changes in shares outstanding? Clearly not. Now it also becomes apparent what the root of the problem is:

There was no compelling reason why book values per share should underpin the analysis.

The above observations set the stage for a more constructive analysis. Given that y_0 provides the natural starting point in valuation analysis, casual observation suggests that one should pick $y_0 = E_0 [e\bar{p}s - \text{next year}] / r$. In other words, by extension, it would seem reasonable to entertain the sequence $y_t = E_0 [e\bar{p}s_{t+1}] / r, t = 0, 1, 2, \dots$ It follows that

$$z_t r = e\bar{p}s_{t+1} - (R e\bar{p}s_t - r d\bar{p}s_t)$$

for all $t \geq 1$. The mathematics is elementary and, to be sure, so far there are no restrictions on the accounting rules that determines the $e\bar{p}s_t$ sequence. It need not even be a dollar-per-share variable.

The appeal of this specification of $\{y_t\}$ hinges on its conceptual and empirical content. Every specification of $\{y_t\}_{t=0}^{\infty}$ will, of course, maintain PVED (on a per share basis), but conceptual and empirical issues come into play if one wants to approximate PVED by cutting (***) short in terms of the number of years that enter the valuation. Loosely speaking, it makes sense to evaluate any specification of $\{y_t\}_{t=0}^{\infty}$ in terms of the errors.⁶

$$PVED - \left(y_0 + \sum_{t=1}^T R^{-t} z_t \right)$$

Hence, the smaller the errors across various horizons (T), the better. As a special case, one can put T=0 and consider the error $P_0 - y_0$. This perspective implies that an "ideal" accounting based valuation model satisfies $z_t = 0$ and $P_0 - y_0 = 0$. No matter what T one picks, there is no approximation error.

VI. Accounting Concepts and the Specification of $\{y_t\}_{t=0}^{\infty}$.

To sharpen up the analysis, a restriction on the accounting will now be necessary. We consider the idea of earnings (eps) being permanent in expectations, which one naturally defines as follows:

$$e\bar{p}s_{t+1} = R e\bar{p}s_t - r d\bar{p}s_t$$

for all $t = 0, 2, \dots$. Importantly, the above equality need not hold for $t = 0$, and hence the qualifier "in expectation". If the last expression holds for $t = 0$ as well, then $e\bar{p}s_1 = R eps_0 - r dps_0$, and earnings are permanent without the qualifier "in expectation". In other words, "permanent earnings implies permanent earnings in expectation", but the converse is false.

Permanent earnings in expectation means that the growth in expected eps beyond the next year depends on the payout policy alone. That is, for each date $t \geq 2$,

$$\Delta e\bar{p}s_t / e\bar{p}s_{t-1} = r \times [1 - d\bar{p}s_{t-1} / e\bar{p}s_{t-1}].$$

A full payout policy leads to zero growth in expected earnings beyond the upcoming year; in case of zero payout for any future date $t \geq 2$, the growth in expected earnings equals r , i.e., the retained earnings have an earnings rate that corresponds to cost-of-equity capital. These extreme policies firm up the concept of permanent earnings in expectations. But there

are no restrictions on the payout policy per se, and the ratio may change over time. Similarly, one can only invoke MM-type of dividend policy irrelevancy to motivate the concept, though such irrelevancy is not implied.

Given that permanent earnings in expectations by definition corresponds to $z_t = 0$

(when $y_t = \bar{e}ps_{t+1} / r$), the following result is of interest.

Proposition I: Consider the specification $y_t = \bar{e}ps_{t+1} / r, t = 0, 1, 2 \dots$. Then $z_t = 0$ for all $t = 1, 2, \dots$ if, and only if,

$$P_t = \bar{e}ps_{t+1} / r$$

for all t, including $t = 0$.

To relate the model to RIV and the section III discussion, next define

$\Delta bv\hat{p}s_t \equiv \bar{e}ps_t - \bar{d}ps_t$, in which case

$$\bar{e}ps_{t+1} = \bar{e}ps_t + r \Delta bv\hat{p}s_t$$

In expectations, earnings satisfy a random walk aside from the incremental investment attributable to the date 0 (!) shareholders. The last interpretation is unrelated to clean surplus as well as the (expected) change in book-value per share. To underscore this point, note that the definition of $\Delta bv\hat{p}s_t$ here does not depend on the initialization $\Delta bv\hat{p}s_0 = bvps_0$ which contrasts with the approach (ii) in section 3 which depends on $bvps_0$. *The specification $y_t = \bar{e}ps_{t+1} / r$ combined with (**) therefore yields a valuation approach which in no shape or form depends on the current book value per share, except insofar that it influences the forecasts of $\bar{e}ps_t$ and $\bar{d}ps_t$. Only the projected flows of earnings*

and dividends on a per share basis are relevant valuation attributes, and one cannot "infer" $bvps_0$.

At this point an inquisitive reader might well ask: Does this way of looking at valuation make sense in the theoretically interesting case when we have mark-to-market accounting and $P_t = bvps_t$ for all t ? The perhaps somewhat surprising answer is 'yes', provided that clean surplus applies for the all-equity approach. The proof is immediate because (i) $bv\hat{p}s_t = bvps_t$ (!), and, one can work with an "as if" assumption that there will be no changes in shares outstanding; (ii) mark-to-market accounting implies $\bar{e}ps_1 / r = bvps_0$.

Proposition II: Consider the specification (***) with $y_t = \bar{e}ps_{t+1} / r, t = 0, 1, \dots$, and clean surplus accounting. Then mark-to-market accounting, $bvps_t = P_t$, implies that $z_t = 0$ for all t .

To appreciate that transitory earnings satisfy permanence in expectation consider the case of full payout, $\bar{e}ps_1 = \bar{d}ps_1$. In that case, $bv\bar{p}s_t = bvps_0$, and $z_t = 0$ because $\bar{e}ps_t = r \times bvps_0$ for all t . A full payout makes it easier to see the result, but the payout policy is otherwise of no relevance. Permanent earnings in expectations is therefore a robust concept in that it holds both for transitory and permanent earnings.

Analogous to the definition of permanent earnings in expectation, one can define transitory earnings in expectations as

$$\bar{e}ps_{t+1} = r \times bv\bar{p}s_t \text{ for } t \geq 1$$

This definition disregards issues related to share transactions, but this issue will be of no importance in the current context. The important point is as follows: *Transitory earnings in expectations are also*

permanent in expectation, but the converse is not true. The first part of the statement follows

because

$$\begin{aligned} \bar{e}ps_{t+1} - (R\bar{e}ps_t - r\bar{d}ps_t) &= \\ r(\bar{e}ps_t + b\bar{v}ps_{t-1} - \bar{d}ps_{t-1}) - (R\bar{e}ps_t - r\bar{d}ps_t) & \\ = r b \bar{v} ps_{t-1} - \bar{e}ps_t &= 0. \end{aligned}$$

With respect to the converse statement, consider the case when earnings are permanent, without the qualifier "in expectations". Such earnings are obviously permanent in expectations, but they are not transitory in expectations. In fact, one can show that now

$$\bar{e}ps_{t+1} = r x (b\bar{v}ps_t + g_0)$$

for $t \geq 0$ and where $g_0 = P_0 - b\bar{v}ps_0 \neq 0$ generally. Hence, the expected earnings in future years depend on current goodwill which also equals expected future goodwills (i.e., $g_t = g_0$ for all $t \geq 1$).

A conjecture emerges: It should make more sense to focus on forecasted (eps, dps) rather than forecasted ($bvps, dps$) because permanent earnings in expectation is more robust than transitory earnings in expectation. The next few paragraphs develop the point in analytical terms.

Suppose we want to "estimate" the intrinsic market value on the basis of a truncation of the series in (**). As a matter of definition, let

$$\hat{P}_0(T) \equiv y_0 + \sum_{t=1}^T R^{-1} z_t$$

where, as before, $z_t = y_t + dps_t - Ry_{t-1}$.

Next define the two errors

$$Err_1(T) \equiv \left| P_0 - \hat{P}_0(T) \right|$$

where now $y_t = bv\bar{p}s_t, t = 0, \dots$; further

$$Err_2(T) \equiv \left| P_0 - \hat{P}_0(T) \right|$$

where now $y_t = e\bar{p}s_{t+1}/r$. To avoid irrelevant issues, assume the accounting satisfies clean surplus on a per share basis because there are no expected changes in shares outstanding.

With these specifications/definitions it is readily seen that

$$Err_1(T) \equiv R^{-T} \left| \bar{P}_T - bv\bar{p}s_T \right|$$

and

$$Err_2(T) \equiv R^{-T} \left| \bar{P}_T - e\bar{p}s_{T+1}/r \right|$$

One obtains the following result.

Proposition III: Whether eps are permanent or transitory in expectations, $Err_0(T) = 0$ for all T. On the other hand, $Err_1(T) = 0$ only if eps are transitory in expectations.

One can interpret the result in terms of what traditional accounting theorists refer to as the "canceling error theorem" associated with consecutive balance sheets. Errors in asset (liability) valuations have no negative implications with respect to the measurement of earnings, provided that the errors remain unchanged across dates. But errors in earnings always imply errors in the balance sheet(s). Hence, the essence of permanent earning in expectation is that any anticipated errors in the balance sheet are constant over time.

In empirical terms, the superiority of the (\bar{eps}, \bar{dps}) approach relative to the $(bv\bar{ps}, \bar{dps})$ approach can be thought of as follows. Given the discount factor, is it easier to "guess" a firm's market value by knowing \bar{eps}_{t+1} or $bv\bar{ps}_{t+1}$ (or $bvps_0$)? The answer is, rather obviously, \bar{eps}_{t+1} .

Permanent earnings in expectations represents an ideal version of earnings (eps) measurement, and it serves as a benchmark. In practical settings there will be deviations so that $z_t \neq 0$, and, of course, $P_t \neq \bar{eps}_{t+1} / r$. In this regard, firms that use conservative accounting and grow its size of operations will also generally grow its earnings beyond what is implied by the earnings relation, i.e., $z_t > 0$. Specifically, if a firm is expected to have earnings growth in excess of the discount factor up to and including date T, then P_0 will exceed \bar{eps}_1 / r and, further, $z_t > 0, t \leq T$. This claim follows analytically. A cursory evaluation of real world stock pricing relative to analysts expectations will validate it empirically. "Permanent earnings in expectations" does not, in other words, apply to the very successful firms like Microsoft and Cisco Systems for the foreseeable future. Having said that, there are no reasons to believe that the book value approach inherent in RIV will be any more useful for practical "intrinsic value" analysis.

VI. Concluding Remarks

This paper has examined RIV in a rather critical light, but these observations should not overshadow that the RIV model has contributed to accounting theory. Two points deserve to be mentioned.

First, one can use RIV to identify residual earnings as a possible measure of a firm's value creation. By taking the present value of the expected residual earnings, the difference between market to book values comes into focus. Many students of accounting undoubtedly have found the underlying straightforward analyses insightful. In a similar vein, to understand the workings of accounting it also helps to note that RIV holds for all accounting principles: Peasnell [1981] [1982] highlights this aspect of RIV. Peasnell also casts his discussion in a capital budgeting context rather than equity valuation, a matter which ought not to be overlooked when one appraises the usefulness of RIV in practical business settings.

Second, RIV has proven useful in some models if one wants to derive certain analytical results with minimum complications. Ohlson [1999] emphasizes this aspect of RIV, and he notes that dividend policy irrelevancy makes it awkward to evaluate PVED directly. In contrast, RIV, with its focus on expected residual earnings, does not depend on the dividend policy (if MM applies). But it also follows that core insights of these analyses and models in no way hinge on RIV. Nor do these analyses implicitly suggest that RIV is a "natural" or "preferable" way of looking at equity valuation. Though analytical expediency can potentially lead to conceptual and practical implications, one need to keep in mind RIV may not be the only convenient scheme available to evaluate PVED.

In contrast to RIV's usefulness in theoretical/conceptual contexts, practical settings introduce a number of problems with which one must deal. Most of these stem from the fact that corporations do not operate as proprietorships. Given the possibility of "new" shareholders, one can expect problems associated with the clean surplus relation. Violations of clean surplus are also magnified by GAAP

because GAAP does not rely on a proprietorship concept in prescribing the accounting rules for certain capital transactions (i.e., the accounting for options and pooling-of-interest accounting). Individuals who advocate that RIV can serve as a useful practical tool to assess a firm's intrinsic equity value face a challenge: They need to spell out why the many problems associated with RIV are not as bad as they seem.

The most limiting aspect of RIV, however, relates to the role it assigns to book values. Residual earnings, as a concept, states that earnings ought to be compared to the underlying investment generating those earnings, i.e., the start-of-period book value. It is also striking that current book value provides one of the two ingredients which determine market value. To center the valuation analysis around current and expected book values has the disadvantage that it does not conform to how analysts look upon their work. Analysts tend to compare eps to the prior period's eps, the percentage increase of which is much more important than an ROCE evaluation (or trend in ROCE). Moreover, analysts use anticipated eps sequences as the central valuation attribute, without reference to the bvps sequence. The statement seems difficult to dispute, even though the idea of a "typical analyst" and his/her approach to valuation is somewhat ambiguous. To make matters worse as to the relative usefulness of RIV, there is a compelling conceptual reason why eps is preferable to bvps dependent valuation attributes. Projected eps numbers can exploit the "canceling error theorem" in consecutive balance sheets. Only growth or inconsistently applied accounting principles can reduce the power of this robustness result. Proponents of RIV as a practical valuation tool face yet another challenge: They need to address why it makes sense to include projected *bvps* as valuation attributes, and why current *bvps*

provides the natural starting point in valuation.

Endnotes

1. For example, see Ohlson [1994] and Lee, Myers, and Swaminathan [1999] concerning dirty surplus issues.
2. The issue as to how RIV meshes with GAAP has also been discussed by Penman [2000].
3. Another argument, due to Penman [2000], in favor of the usefulness of V_0 in fundamental analysis runs as follows. As a first step, determine V_0 ; as a second step, estimate the fraction of V_0 that is likely to accrue to existing shareholders. Of course, this line of reasoning has the advantage of not depending on MM (a point underscored by Penman [2000]).
4. Examples of such studies are Francis, Olsson, and Oswald [1997], and Penman and Sougiannis [1998].
5. This section uses ideas originally developed in Ohlson [1998].
6. Applications of RIV introduce a term capturing the long-term growth/decay in residual earnings beyond the horizon date. These approaches lead to their own problem since one must now consider what determines the growth/decay in residual earnings. Furthermore, these schemes build in such flexibility that they reconcile with other non-RIV valuation approaches. Penman [1997] develops this point fully. Specifically, he shows that book values, however determined, will be irrelevant if one assumes zero growth in residual earnings at the horizon date. The role of clean surplus as an accounting concept ceases; it becomes a mere “house-keeping” identity.

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