Formal Equity Valuation: Overview and Limits

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February 2026

Abstract

The paper assesses the practical usefulness of equity valuation models found in virtually all popular textbooks. These valuation models are: (i) The Present Value of Expected Dividends (PVED), (ii) Residual Income Valuation (RIV), (iii) Discounted Cash Flows Model (DCF), and (iv) The Capitalized Expected Earnings Model (EPS-Cap). On a nuts-and-bolts level, the paper delves into the mathematical structures, what financial attributes should be forecasted (i.e., EPS, Cash Flows, Dividends, and Residual Earnings), and how to deal with two key parameters (i.e., cost of capital and growth).

The main points made can be summarized as follows. First, as a practical matter, future EPS and forward PEs must serve as centerpieces. Second, formulas that rely on a firm-specific growth parameter (g) cannot, in general, be quantified meaningfully in terms of financial attributes (e.g., book value or revenues), and thus any attempt at practical implementation will be difficult at best. The overall flavor, however, underscores that formal formulas can be put to good use as practical tools, if one is aware of the limitations, and how these can be dealt with constructively. Thus, the paper makes the case that it would be a mistake to dismiss valuation formulas as simply a form of academic conceit.

To make the paper useful in applications, an Appendix elaborates on how numerous well-established textbooks motivate, develops and discusses the limitations of points made in the text. This part of the paper should be especially helpful to teachers, as well as practitioners.

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February 16, 2026

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1. Introduction

Professional investors, no less than students of accounting and finance, are all familiar with formal analytical expressions that convert financial inputs regarding firms' financial characteristics, to values of the firm's equity. Such formulas are taught in business schools. Thus, textbooks state and develop formulas such as the Present Value of Expected Dividends (PVED), and the present value of Discounted Cash Flows (DCF), in addition to more sophisticated methods such as Residual Income Valuation (RIV), and the present value of Capitalized EPS (EPS-Cap). Familiar as these formulae may be, it is noteworthy that they are by no means applied as a matter of routine by professional investors. If anything, famous successful investors, such as Buffet, Graham, Dalio, Schiff, do not suggest that the key to achieving investment success centers on clever adaptation of valuation formulae. At least there is no such folklore. It may seem somewhat puzzling insofar the name of the game should be how to make money in the stock market. Why the formulae?

Textbooks are aware that there are limits to their utility as tools. Penman (2023) notes that the formula re of pedagogical utility, and it is a mistake to consider formula as tool which resolves the under-(or over-) valuation issue. More typically, Wahlen et al. (2015) underscores the use of formulas as a critical classroom tool to bring into focus relevant considerations when one conceptualizes what comes into play when one values stocks. In this context it is well to note that risk and growth become central – no less than forecasts of financial outcomes. Though textbooks recognize this matter, at the same time these specificities of formulae are not necessarily all that relevant. And some textbooks, like Damodaran (2014), note that less than apparent circumstances such as market sentiments and institutional factors can influence stock prices. In sum, textbooks express reservations about the formulae discussed, and readers are told that investment analysis is a complex matter without clear-cut bottom lines.

Despite all the contextual qualifications relayed to the formulae, their prominence in textbooks gives rise to some basic, concrete, questions. First, can one reasonably make the case that one (or two) of the formulae work better than others? Though it is unclear how one can firm up a criterion how to rank on performance, at least one should be able to make some arguments, pros and cons. Second, questions arise as to how to "best" apply formulae. In other words, what aspects of any given formula demand the most attention?

This paper deals with the above issues. Broadly speaking, it makes an attempt at educating the reader to ideally result in an understanding of how the formulae can be put to constructive practical use. To accomplish this objective the paper frequently refers to well-known textbooks and what these textbooks have to say about the formula. It enhances the perspective on the comments made in the body of the paper.

To aid attempts at internalizing the many points made, an Appendix summarizes the textbooks: the models' inputs as spelled out in each of the textbooks. The Appendix organizes the input requirements in terms of financial forecasts and parameters.

As suggested above, the Appendix, which in many ways is broadly familiar to most readers, complements the body of the text. Its main purpose is to elaborate on concepts that the textbooks trat in a relatively limited way. This discussion will make the case that the forecasted EPS and forward PE ratios are central in equity valuation. A closely related topic relates to the role of the models r and g parameters. Hopefully, this discussion will result in a more nuanced perspective on the valuation formulae.

2. The Formulates' General Characteristics

This section juxtaposes what goes into valuation formulae, commonalities and differences. In order, the section spells out the potential financial inputs, the parameter required, and, finally, the four valuation models.

Valuation tends to depend on forecasts, that is, the financial input variables realizations occur in the future. Such inputs are typically subjective or, alternatively, provided by analysts. There are exceptions though, as noted below.

These financial outcome variables are:

(i) Earnings or EPS – most prominent.

(ii) Dividedness or DPS – in the former case they may refer to comprehensive dividends, adjusting the standard dividends by treating capital contributions as a negative dividend.

(iii) Book values or Common Shareholders Equity – on a per share basis, or BVPS. This variable typically refers to the current book value.

(iv) Cash flows, often more precisely referred to as Free Cash Flows (FCF). The variable distinguishes operating from financial activities. FCF must reconcile with both activities (which are exhaustive). Critically, FCF is not a line item in GAAP-produced financial statements. Thus, FCF must not only be forecasted – they must also be conceptualized in concrete terms.

(v) Revenues, often used interchangeably with Sales – such forecasts are also generally available for publicly traded firms. In general, the variable refers to the future and thus requires forecasts.

The various formulae can also refer to derivative accounting quantities, such as PM (Profit Margins), Expenses, Total Assets, Net Accruals, Tax Adjustments, Net Financial Assets (Liabilities), Operating Earnings before and after Non-recurring Items etc. These may be integral to the forecasting methods or even be part of the actual formulas.

With respect to the parameters entering the formula, two are pervasive:

The cost-of-capital, or the discounting parameter, often denote "r" or "r(e)" (and r+1=R). An obvious role relates to its paramount presence in the discounting of expected dividends, in which case r depends on the risk-free rate and plus some adjustment for risk. Both elements end up being subjective, and most textbooks refer to finance prescriptions in the spirit of CAPM. But aside from discounting it should be noted that it often plays a role in the conceptualization of the forward P/E. Specifically, textbooks often suggest that, at least as a benchmark or point of reference, the forward P/E = 1/r.

In an operating framework (based on the identity, total firm activities = operating activities + financial activities) r is replaced by "WACC" and the discounting refers to FCF. Textbooks spend considerable space on how these should be conceptualized and quantified (like leverage-adjusted CAPM implementations). Brealey et al. (2017) argue that cost of capital estimation is one of the most challenging aspects of practice, while Damodaran (2025) offers detailed approaches linking CAPM and multi-factor models.[1] (The Appendix provides an extensive discussion on how textbooks deal with these formulae-required quantities.)

The second parameter relates to growth, almost always a constant denoted by "g" which satisfies $r > g > 0$ (or $g = 0$). The parameter introduces great ambiguity insofar that g can represent several possibilities. On basic level, g applies to discounting attributes, in particular dividends or FCF. One can take it a step further and view growth as a measure that connects motor directly with operating activities, like earnings, sales and investment expenditures. As will be discussed later, g may also be conceptualized

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[1] Damodaran (2025) elaborates extensively on estimating r via CAPM, multi-factor models, and empirical betas, but notes the fragility of assumptions about market risk premium.

differentially depending on the valuation formula though such arguments are often less than compelling. It is also noteworthy that in investment practice growth is generally tied to firms' forward P/E, but not generally in the long term.

To get a feel for the conceptual variations encountered in the literature, Penman (2013) notes that the implementation of valuations tends to overstate growth due to improper handling of stock buybacks. Similarly, Easton et.al. (2021) also notes the tendency in practice to neglect effects required by reinvestment fundamentals. Brealey et al. (2017) underscores that analysts' treatment of g varies widely across models, which contributes to the divergence in valuations. The proposed remedy is that the growth should pick up on a firm's projected steady state growth.

The remainder of this section reviews the basics of the four (valuation) formulae. Some care is required because some elements of the models overlap, attributable to in part common assumption. In practice, however, such equivalence will be broken due degrees of freedom in many implementation aspects As Brealey et al. (2017) and Penman (2013) make crystal clear, formulae differ because of their differences in economic factors that underpin the formulae.

Subject to the above caveats, a brief synopsis of the four valuation models follows:

(i) The Present Value of Expected Dividends (PVED(r)). In its most basic form, it discounts the sequence {D(t); t = 1, 2, 3,.. } using a pre-specified discounting factor. The formula is also referred to as Dividend Discount Model (DDM), in which cash it typically adds an assumption of earnings and some growth dynamic. This more expansive model, which includes earnings, will be discussed in detail later.

(ii) The Residual Income Valuation (RIV). It starts with the current book equity value (the valuation anchor) and adds the present value of future residual earnings (the expected value creation, usually related to profitability). The model rests on PVED and, of course, the so-called Clean Surplus Relations (CSR). In addition to r, the growth parameter g is present, and it affects the present value of expected future Residual Incomes. The formula is well-known and shows up in all textbooks.

That said, though the formula has been around for at least 5 decades, it does not appear to be much used in practice. A less elaborate approach bypasses the PV of Residual Incomes, and it assumes the reduced form valuation formula upfront, without any reference to PVED and CSR. This analysis allows for a fresh perspective on the g-parameter, and it opens parsimonious implementation strategies that go beyond the textbooks.

(iii) The Present Value of Expected Cash Flow (PVCF), discounted by WACC and corrected for the net financial position (net financial assets or minus net financial liabilities). In principle, this model reconciles with PVED, but it is unclear insofar WACC must be derived from r, for all dates. The most troubling issues relate to the cash flow specification, which goes beyond the difficulties of forecasting. And it is far from clear how to deal with growth given that cash flow can be negative even for profitable firms. These issues will be discussed.

(iv) The Present Value of Capitalized EPS. The formula relies on a predetermined horizon date to capitalize the EPS at that date and then take the present value. There is also an add-on for the pre-horizon expected dividends. The capitalization multiple that scales EPS at the horizon date is presumed to be a long run sustainable; this long run sustainability approach implies that EPS capitalization requires no adjustment for idiosyncratic growth. Thus, aside from its general simplicity, the formula has the unique aspect of not requiring a growth parameter.

Applications of the four models comprise of two terms. A present value calculation up to an exogenous horizon, denoted by T, and a second term, a horizon date terminal value calculation. A special case applies when the current and horizon dates concede.

3. Evaluations of the Four Models

3.1 PVED and Its Extension: the Gordon Williams (GW) Model

PVED has a paradoxical status in equity valuation. In textbooks PVED always shows up early as central to appreciate the foundational role of future dividends, and their riskiness, in equity valuation. However, Wahlen et al. (2015), like Penman (2013,) argue that this prominence of PVED is largely pedagogical rather than practica; it is generally accepted that practical investing is rarely done via an explicit forecast of future expected dividend sequence and a related explicit PVED calculation using some r.

Common sense suggests that the dividends must connect with future earnings – earnings cannot be avoided. To model this aspect, textbooks rely on the Gordon-Williams (GW) model. It assumes that earnings and dividends both grow at the same fixed rate.[2] . As a direct consequence the payout is fixes for all dates.

Given GW, PVED reduces to the well-known equation

$$P(0) = [K/(r - g)]*X(1).$$

Thus, the one-year-ahead forward P/E, the multiple equals K/(r-g). Palepu et.al. (2023), and most textbooks refer to the expression to motivate the forward P/E. Of pedagogical interest are the roles of r (a "bad") and g (a "good').

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[2] Those expected earnings are denoted by X(1) here.

K's status as an inter-temporal constant raises an obvious question: what about cases – quite common – when firms do not currently pay dividends? More generally, what about basic economic concept of dividend policy irrelevance?[3]

GW does not connect K to (r.g) though such ought to be the case, in particular an increase in K should affect g negatively if r remains fixed. It is simply a matter of basic economics. More generally, the GW model lacks a setup such that one can identify conditions for dividend policy irrelevance (DPI) to hold. That is, the ideal setup should introduce earnings beyond dividends though both K and g can be left out. And the objective of explaining a simple benchmark forward P/E is clearly a challenge does not present by textbooks.

A parsimonious, more versatile modelling can replace GW. Formally: *Any two of the following three statements imply the missing third:*

A1: P(t) = PVED(r)

[3] This issue is raised by Easton et al. (2018) who highlight this inconsistency. They also note that persistent assumptions on payout and growth rarely hold in applied settings.

A2: X(t+1) = (1+r)*X((t) - c*D(t) + noise(t+1)

A3: P(t) = Expected X(t+1)/c.

Note the absence of a g-parameter, and most important, the K(t)-sequence is unrestricted. In sharp contrast to what one can infer from GW, the setting now allows for a totally general DPI. Such general irrelevance applies because the forthcoming (expected) D(t+1) has no connection to expected earnings (t+1), or conversely.

To be sure GW can identify DPI, but only as a restricted case. A fixed constant K which satisfies $0 < K < 1$ implies g = r - K*c or c = (r - g)/K; fixing, the assumptions imply that g increases as K decreases and conversely. However, more generally, the g-parameter does not mix with DPI.[4]

One can next address the economics of the c-parameter. It must reflect degree of accounting conservatism. It turns into a subtle issue because the P/E is always constant (1/c), which rules out all sorts of idiosyncratic such unusually low/high profitability, a transitory growth element, an unusual tax

[4] Penman (2013) emphasizes that models that rest solely on payout ratios, growth, or risk being detached from accounting fundamentals, and thus require an expanded set of assumptions to anchor valuation in practice.

rate, zero dividends etc. One can eliminate this possibility of idiosyncratic state of affairs, in expectation: assumes that the firm satisfies a steady state growth, that is, all accounting variables (i.e., earnings, book value, and dividends), and by implication P, grow at the same constant rate. This approach has been recognized in the literature. Brealey et. al. (2017) document that steady-state assumptions are often used in corporate finance pedagogy as a simplifying device – much like a benchmark. And benchmark growth sets the stage for understanding the benchmark forward P/E.

Given this restrictive assumption, the inverse of the forward P/E multiple, c, equals

$$c = BTM^{*}r + (1 - BTM)^{*}\text{Div-Yield}.$$

As a valuation formula, stock price = (1/RHS)*Expected earnings(t+1). The RHS, the model multiple, is observable given some r. Similar expressions show up in literature. Easton et al. (2021), for example, show that book-to-market ratios (BTM) and dividend yields (Div-Yield) connect with valuation multipliers. The uniqueness of the above equation is its complete explanation of the forward E/P again, as a benchmark that captures the underlying growth rate.

The equation leads to empirically plausible estimates of the forward P/Es. For example, a relative risky firm, r = 0.09, with conservative accounting, BTM = 0.4, and a relative stingy yield 0.02 results in c = 0.048, which results in an approximate multiple of 20. The value, P, equals 20*Expected earnings. The example shows that the formula satisfies the general property r > c > dividend-yield when BTM < 1.

However, the above equation falls short as a practical valuation insofar that it leaves out considerations of economic growth and profitability. There is no g in the equation, but it can be inferred from r - Div-yield. Ross et al. (2010) emphasize that any valuation formula that does not explicitly incorporate growth, related to operations, is incomplete. Thay state that without an explicit assumption about growth, the valuation is not capturing the firm's fundamental prospects.[5] In addition, Palepu et al. (2013) remind

[5] That's why they insist that the constant-growth GW model is the simplest legitimate valuation model, precisely because it embeds g.

us that valuation models must ultimately link back to profitability metrics and competitive strategy to remain relevant.

To summarize, the PVED model, which allows for DPI, lacks power to nail down equity pricing because the model does not focus on forecasting EPS in a setting that allows for operating growth and the dynamics of the forward P/E. The GW method makes things worse because it introduces earnings via a trite rescaling of the dividends.[6]

3.2 Residual Income Valuation (RIV)

This model attracts user because it explicates the ideas of BV as starting point and then adjusted for the expected future value creation. Analytically, RIV rests on the Clean Surplus Relation (in expectation), PVED(r), and a fixed growth relation. That is,

$$RI(t + 1) = (1 + g)*RI(t) + noise(t + 1),$$

[6] Damodaran (2014) cautions that linking earnings to dividend policy can obscure the independence of operating performance from payout choice.

where RI(t + 1) = X(t + 1) - r*BV(t), per definition. This construction is widely presented in accounting valuation textbooks, with Penman (2013) arguing that residual income provides a natural bridge between book values and earnings, while maintaining clean surplus accounting.

The assumptions imply PVED reduces to

$$P(t) = BV(t) + RI(t + 1)/(r - g),$$

where $r > g$ and the application of the expectation to RI is implicit.[7] Per textbooks, the first term identifies to a "valuation anchor", and the second corrects for the PV of the expected "value creation". This engaging terminology provides much of the classroom motivation; that is, the formula rests on solid economics, or so it seems. Anchoring valuation on book value improves robustness, especially when forecasting long-term cash flows is difficult (Damodaran, 2025).

To highlight the role of profitability and book return on equity, the second term is often rewritten as

[7] Brealey et al. (2017) document that this decomposition mirrors the standard approach in finance to break value into an asset base plus excess return.

$$RI(t + 1) = [ROE(t + 1) - r]*BV(t).$$ [8]

The expression inside [.] shows the rate of periodic value-added, which explicitly adjusts for the regular cost-of-capital. In this context ROE measures a firm's performance from the perspective of the equity holders. It should be noted the ROE is flawed as a measure of performance because a firm with consistently generous payouts pushes the ROE materially upwards. This claim is simply a matter of how conservative accounting works. Consistent with Palepu et al. (2013), the possibility reminds us that ROE can be distorted by payout policies, making it less reliable as a long-term performance measure: payout-driven distortions make raw ROE a problematic performance measure. This concern is also raised by Penman (2013), who observes that accounting ratios often distort performance measures due to effect of dividend payout policies.

The discussion so far has centered on some of the strengths and difficulties of interpreting RIV. Regarding the latter, r and g become particularly problematic as a practical matter. One naturally asks whether

[8] Easton et al. (2021) note that this formulation makes explicit how excess profitability over the cost of equity drives intrinsic value.

it should, as practical, matter relate to the specification of the RI dynamic and perhaps even the role of forecasted profitability? The textbooks do not offer a clear direction on how to deal with the question. And this difficulty spills over to the denominator-scaling of RI(t+1)[9] .

To proceed in getting a better handle on how to interpret RIV, one can simplify its expression by eliminating RI(t+1). Specifically, note that RIV equals

$$P(0) = -w*BV(0) + (1 + w)*[X(1)/r],$$

where, by definition, $w = g/(r - g)$. In other words, the value simply equals a weighted average of the current book value and the expected forward earnings, capitalized by the cost-of-capital.[10]

Though the negative weight on book value may initially surprise. But it can be thought of as picking up on book value serving as a relative indicator of future expenses.[11] This makes sense because the benefits inherent

[9] Damodaran (2025) shows that even small changes in g relative to r can lead to implausibly large swings in estimated intrinsic value.
[10] Easton et al. (2021) point out that this framing makes valuation more intuitive, particularly for teaching purposes.
[11] Penman (2013) interprets this as the cost of maintaining the assets that will generate future earnings.

in book value have been controlled for through the second term, the capitalized next period's expected earnings.

The attention now turns on the weight or w, and thereby g too. What should be the order of magnitude? Based on a starting point ("bounded rationality") guess, one simply puts w = 1, that is, g = r/2.[12] Equivalently, one can conjecture that the rational guess of the splitting up of the return (r) into growth and the dividend yield should be the same, that is, g(= growth) = (r - g) (= div-yield). While somewhat arbitrary, from a practical perspective it can be viewed as a rough approximation.

RIV reduces to the straightforward expression

$$P(0) = -BV(0) + 2*X(1)/r$$

To interpret and motivate the relation, note that

$$X(1)/r = [P(0) + BV(0)]/2 = \text{Average } (P(0), BV(0))$$

[12] Damodaran (2025) proposes similar heuristics in valuation practice when precise estimation of growth is infeasible. This aligns with Palepu et al. (2013) who argue that heuristics may approximate long-run equilibrium in mature firms.

From the expression one can infer the parameter r from real world data.[13] As a first cut it aligns with data, at least for mature firms. Consider P = 1, BV = 0.5, and forward P/E = 16 (empirically reasonable). Then the implied r = 1/(16*0.75) = 8.33% which is in the ballpark of textbooks posit in numerical exercise. More generally, note that any one of the three inequalities BTM $<$ 1, r $>$ (1/Forward P/E), and r $>$ ROE implies the remaining two. Data sampled from large firms will generally support these inequalities.

Overall, from a practical perspective, applying RIV focusing on the term RI(t+1)/(r-g) causes almost insurmountable difficulties if one tries to connect the Ri numerator, and its growth, to g.[14] A more effective approach simply imposes g = r/2 and combines it with reasonable values of r. Though the formula, -BV(0) + 2*(X(1)/r), becomes rather bare bones, it can still estimate a plausible value. Of course, the restriction can be treated as an

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[13] Wahlen et al. (2015) argue that while this stripped-down version sacrifices theoretical precision, it provides a useful pedagogical tool for linking valuation to observed market multiples. Damodaran (2012) also employs implied cost of equity methods, where r is inferred from market prices rather than estimated ex ante.

[14] Damodaran (2025) argues that operationally defined g is often the weakest link in RIV-based valuations.

approximation, and the final valuation becomes first cut estimate. One can also recognize that the restriction r/g=2 does not restrict g per se.

3.3 The Present Value of Free Cash Flows (PVCF)

Textbooks, especially in finance, emphasize the conceptual and practical relevance of the PVCF equity valuation method. It rests on the same PV concept as PVED, the difference being that it expands the modelling by shifting away from dividends to cash flows, or more precisely FCF = "Free Cash Flows". Brealey et al. (2017) suggest that the free cash flow model has become the dominant framework in finance. The main merit, they argue, is its focus on the intrinsic cash flow generation – in sharp contrast to dividends. Cash flows also have the advantage of being less ambiguous than earnings, or so it can be argued.

The framework separates operating activities from financial activities, and, critically, all financial activities are neutral, (zero NPV); thus DPI applies. Financial activities can be valued separately and independently of operating activities. Damodaran (2014) also argues that this separation makes the model flexible and applicable across diverse industries. To appreciate the finance irrelevance aspect, note that the absence of any borrowing/lending (which is possible as a practical matter, at least as an approximation) then these FCF(t) = Div(t), and P = PVED. This separate benchmark will be picked up in the formula development coming up next.

The valuation formula per textbook includes a Terminal Value component TV(T) where T > 0 denotes the horizon date (t = 0 stands for the current date).[15] The formula can be expressed as

P(0) = FCF(1)/(1 + WACC) + FCF(2)/(1 + WACC)^^2 + …

+ TV(T) + NFA(0),

Where TV(T) = {FCF(T + 1)/[WACC - g]/(1 + WACC)^^T

NFA(0) = (Net Financial Assets -Financial Liabilities) (t = 0)

There are two parameters, WACC and g.

Textbooks conceptualize WACC: it corresponds to an estimate of cost-of-capital if there was no leverage assuming the hypothetical cost-of-capital

[15] Brealey et al. (2020) show that in practice, the terminal value often accounts for more than half of the estimated equity value, raising concerns about robustness. Moreover, Penman (2013) argues that PVCF can be highly sensitive to assumptions about terminal growth.

= r, WACC is determined by WACC = [Equity/(Equity + NFL)]*r + [NFL/(Equity + NFL)]*BC (AT), where BC (AT) = borrowing cost after taxes assuming NFA = -NFL <0.

Leverage work as expected. Standard concept: r > WACC if and only if NFA= -NFL < 0. With respect to r, Palepu et al. (2013), and most textbooks emphasize the role of CAPM-based cost of equity, while acknowledging estimation errors in beta as a significant limitation. However, less appreciated is the fact that "Equity" in the weighted average equation should equal to the market value, and yet this quantity is the one that should be estimated. In sum, to deal with WACC is arguably more difficult than dealing with r. This point is generally overlooked in classrooms as well as practices.

Next, consider the second parameter, growth = g. Due to the operating perspective, it may seem that the Net Operating Assets (NOA = BV + NFA) should provide the specification. But this is far from obvious insofar that NOA may be negative or a poor indicator of NOA in a subsequent period. To avoid this problem one can use sales growth, which can be viewed as smoothed measure of NOA growth.[16] Another possibility uses some long-term intrinsic steady state growth of operations.

The center-piece variable discounted, FCF, derives from the following accounting equations.

NOPAT = Earnings(AT) + Net Financial Expense(AT)

FCF = NOPAT – Net Accrual for the period[17]

Per standard financial statement analysis, the two right-hand side terms in the second equation are extracted from, respectively, the income statement and the two recent balance sheets. Considerable judgements may be involved in estimating the net accrual; it affects liability accruals as well as asset accruals. Note that CH(BV) = CH(NFA) + Net Accrual.[18] Most textbooks highlight the many issues that may be encountered. Wahlen et al. (2015) expands on the problem of deriving FCF from financial statements because NOPAT introduces subjectivity. And it should be kept in mind that

[16] Damodaran (2014) notes that growth assumptions, while intuitive, can easily become speculative, especially when linked to revenues rather than fundamentals.
[17] Penman (2013) argues that free cash flow mixes operating and accounting adjustments in ways that reduce transparency compared to residual income.
[18] CH(.) stands for change.

FCF must be forecasted, a point underscored by Brealey et al. (2017). As a direct implication, the subjectivity in defining accruals often explains large variation in analysts' FCF projections (when available).

What are the common reactions when the model is applied? Students applying this valuation approach often find it, at least initially, appealing because of its emphasis on "cash flows", which is easy enough to relate to.[19] As noted earlier, on a more formal level, the method elevates the importance of operating activities, and in the spirit of DPI; the financial activities (borrowing, lending, and dividends) are all zero NPV activities as an approximation at least. Thus, they can be set aside and valued separately from the operating activities. This appeals intuitively and the NFA adjustment is as sensible as it is direct. Students and practitioners tend to recognize that these conceptual aspects are sensible.

However, applying the valuation method becomes much trickier when the attention turns to the operating activities. From a practical perspective,

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[19] Palepu et al. (2013) argue that teaching the cash flow focus has pedagogical appeal because it matches lay investors' intuition.

the formula builds in serious drawbacks.[20] Subjectivity is bound to make its presence felt. It goes almost without saying that FCF will be particularly problematic, especially if the FCF is expected to be negative in the near-term years. Moreover, as noted earlier, the parameters (WACC and g) are unobservable and inherently ambiguous. Brealey et al. (2017) also note that disagreement in practice often stems from lack of consensus on the appropriate growth horizon. Their discussion emphasizes how horizon and growth choices drive divergence in practice.

What about analysts' forecasts of (free) cash flows? Theses introduce the problem that the definition of cash flows is usually murky, which in turn stems from the fact that GAAP does not recognize a line item "Free Cash Flows (contrary to EPS and Revenues). Thus, an individual applying the formula will be left to her own devices. And that can be fatally discouraging of course. It is also well to note that firms with material growth in operations are expected to realize negative FCF; it is entirely consistent solid profitability. Damodaran (2014) confirms that negative FCF in high-growth

[20] Penman (2013) critiques DCF applications as excessively reliant on unverifiable assumptions.

firms is consistent with economic theory; it should not be taken as a sign of weakness.

In summary, while the FCF discounting formula does build in appealing concepts – its operating vs financial ingredients and its "Cash is King" emphasis – attempts at applications often disappoint. The method ends up being excessively sensitive to specification details, especially the concept and forecasting of FCF. There are good reasons GAAP stays away from requiring the reporting of an FCF as a line item.[21] As noted, "Cash Flows from Operations" differs conceptually from FCF.[22] FCF always poses a problem because one needs to identify the accounting accrual extracted from consecutive balance sheets. To make matters worse, because the forecasting requires depends on growth near term as well as long term, it is hard to specify growth when the firm is expected to be profitable and the FCF are negative in the foreseeable future.

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[21] Palepu et al. (2013) note that standard setters have deliberately avoided mandating FCF reporting because of its definitional ambiguities.

[22] Easton et al. (2021) highlight that operating cash flows avoid some of the estimation problems inherent in free cash flow definitions.

Overall, the difficulties associated with applying the cash flows approach are apparent when one deals with high growth and risk firms. A folklore saying serves as a warning: “If two individuals independently try to value same firm using the present value of cash flows method, they most likely come up with radically different estimates of value”. In investing men practice, therefore, the method is typically only in shot capital expenditure setting (like the purchase of an office building).

3.4 The Present Value of Capitalized Expected Earnings

This section discusses the simplest model of equity valuation. Specifically, the parsimonious and concrete equity valuation models center on EPS forecasting and depend on one parameter only: the discounting parameter r, thus leaving out g. The EPS focus is inevitable insofar the modelling must align closely with investment practice. As Penman (2013) argues, EPS-focused models provide a most practical anchor for valuation since investors and analysts overwhelmingly use earnings forecasts, P/E ratios, as their primary starting point.

We refer to the formula as Capitalized Expected Earnings (EPS-Cap). It is motivated by the following concepts and modelling. As a starting point, PVED applies given a finite horizon; it can be stated as

PVED(0) = { Div(1)/R + … + Div(T)/(R**T)} + P(T)/(R**T).[23]

where P(T) estimates the value of the stock using an estimate of EPS(T+1) and the related multiple.

The horizon T must be specified, and this issue is judgmental, but in most applications 5 years should suffice. Leger T puts the onus increasingly on dividends, the expression inside {.}, and the TV-term decreasingly so. Given this horizon restriction one can expect that the final term to exceed the sum of the discounted dividends (with some margins very crudely, 80% vs. 20%). Back of napkin calculations can be employed to ensure the materiality of the TV component.

The crucial question now becomes: what about the estimation of P(T)? The focus turns on a forecasting EPS(T+1). And given such an estimate,

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[23] Brealey et al. (2017) document that in practice, this horizon-limited approach reflects how analysts typically stop explicit forecasts after a few years, then rely on terminal multiples.

the next step simply scales EPS(T+1) with the typical P/E ratio for such a firm at this date.[24] The catch is as follow: there should be no need to worry about adjusting the multiple for growth 5 years down the line since the firm, in expectation, is likely to be part of a relative mature industry average at the post-horizon dates. For many cases, a "typical" multiple such as 17 can be good enough. Interestingly, Palepu et al. (2013) highlights that practitioners do indeed often apply industry-average P/E multiples for horizon periods.

What about the estimate of EPS(T+1), the most important ingredient in the formula? It can be estimated starting from analyst's forecasts (consensus) of EPS(1). One can then proceed by applying an estimated of the EPS growth rate.[25] In the absence of the need to adjust for a change in the PM, attention turns to an estimation of the growth rate in revenues. To handle such growth, one can turn to (at least initially), to publicly available analyst forecasts of revenues(2)/revenues(1). This rate of growth can be

[24] Easton et al. (2021) argue that this procedure, though rough, aligns more closely with market practice than classical discounted cash flow.

[25] Penman (2013) argues that analyst forecasts, while imperfect, remain the most widely used input for EPS-based valuation.

applied for all years (in the absence of evidence to the contrary).[26] Analysts also provide long-term estimates of EPS growth, but these estimates are often viewed as too optimistic. Note that Damodaran (2025) points out that analyst long-term growth projections tend to overstate reality and must be adjusted downward. He also stresses that analyst long-term EPS growth forecasts systematically overshoot realizations. Thus, revenues can potentially serve as a relative robust measurement of 5-year EPS growth rate.

With respect to the sequence of dividends, one can use the same approach as for EPS, where now Div(1) acts as a starting point. In this simple approach the dividends and EPS grow at the same rate. More general modelling can be implemented of course, but it should not make much of a difference. That said, one should keep in mind that the growth in dividends must be consistent with the EPS growth; if one increases the economics requires a decrease in the other.[27] This reasoning is an application of DPI.

[26] Brealey et al. (2017) note that revenue-based growth extrapolation is common in practice but prone to optimism.

[27] Palepu et al. (2013) warn that inconsistency between dividend and earnings growth projections undermines valuation credibility.

Accordingly, one valid approach assumes zero dividends and then proceeds to estimate EPS at the horizon given this assumption. Consistent with Penman (2013), he argues that this simplification is often practical for firms retaining most earnings.

To determine the discounting parameter r, one can, as is often suggested, refer to textbook prescriptions, such as implementations of CAPM or Fama-French type of factor models. However, if T is reasonably small then the valuations will be relatively insensitive.[28] A special case arises when T = 0, since R then becomes irrelevant. The vallation reduces to the popular "Comparable Firms" valuation method. This approach is crude, but reasonable if one views operating growth as a non-issue – that is, no adjustment to the forward E/P due to "normal" growth post horizon.

4. The Method of Inferring r

All formula, and their applications, try to estimate the "intrinsic" value of P. This approach aligns with textbooks and investment practice

[28] Brealey et al. (2017) confirm that short horizons reduce sensitivity to r and g.

(assuming usage of a formula). That said, there is always a lingering discomfort that the conclusion about value is sensitive not only to the financial forecasts but also to the specification of risk - the parameter of obvious interest from an investment perspective.[29] One can then argue that it makes sense to assess P's sensitivity to r But any sensitivity evaluation of P as a function of r leaves much to be desired because it reduces the focus. It raises the question: what about the case when the specified r implies equivalent estimated and actual P? Penman (2013) promotes analysis along this line; he argues that sensitivity analysis is not merely a mechanical exercise, but more importantly highlights the fragility of valuation models dependence on cost-of-capital assumptions (No other textbook seems to have picked up on this aspect).

A more direct approach that deals with the ambiguity related to r can be applied: take the current P as a given and solve for the now implied parameter r (To solve for r poses no problems, regardless of the complexity

[29] Damodaran (2025) emphasizes that the discount rate remains the single most critical and controversial input in valuation, as small variations can produce very different outcomes.

of the valuation formula).[30,31] The calculation makes sense conceptually since the resulting r provides an estimate of the expected return, given the current price and forecast, A final step now suggests itself. Given a subjective assessment of risk, one can now ask: “Does my estimated of r look on the low (or high) side? To what extent can I therefore conclude that the stock looks relatively cheap?” This two-stage analysis, one can argue, underpins the analysis focusing on r rather than P-estimation.

5. Concluding Remarks

Due to the material uncertainty about “how come up with the numbers”, applications of the formula may fall short of what one hopes for. This seems reasonable insofar as an investment success centers on the forecasting of financial outcomes (i.e., earnings and cash flows, in particular). That said, applications also require the conceptually elusive

[30] Easton et al. (2021) observe that implied cost of capital (ICC) methods have gained traction as practical tools for inferring r from observed market prices, thereby reducing reliance on ex-ante CAPM estimates.

[31] Palepu et al. (2013) note that ICC estimation is flexible and can be adapted to dividend discount models, residual income models, or free cash flow models without major conceptual obstacles.

parameters r and g. It leads to discomfiting experiences. Thus, the specification conundrum goes beyond forecasts (in a traditional sense) because one cannot, even ex post, make claims about the accuracy of the numbers use. The implication is dire: if an investment has gone wrong, it will be hard to say whether, or not, the poor outcome should attribute to a "mis-conceived" specification of parameters.

The unease associated with specifying the two parameters gets magnified where 1/(r-g) acts a scalar in a formula (in other words P = [1/(r-g)]*Z, and where Z is fixed Z). P now becomes excessively sensitive to a slight change in g (or r) if the starring point is a small difference in r-g. This issue is present in all formulae except the last one.

On a conceptual and practical level, it is noteworthy that the uncertainty related to future dividends and dividend policy parameters can be put aside. As the analysis made clear, the powerful role of DPI renders these aspects irrelevant. Instead, very usefully as a commonsense matter, DPI brings into focus the critical role of EPS forecasting and operating activities in valuation formulae. As the other side of the coin: The Gordon-Williams model is unhelpful as practical matter.

Setting aside conceptual issues, a reader may wonder if there is a bottom-line and whether the various formulae can be ranked: does anyone of the valuation methods dominate the remaining ones? The general answer is an unhelpful "it depends on circumstances, including the implementer's skills/experience". This broad assessment aligns with the textbooks' frequent recognition that the usefulness of a valuation method depends on the uniqueness of a firm's operating environment; abnormal circumstances make it difficult to explain the current price (prime example: forecasted losses for a few years).

To rank the formulae, a more ambitious approach simply identifies attractive attributes. This perspective suggests that the capitalized EPS method ranks the best. There are two reasons. First, consistent with common sense investment practice, it underscores EPS forecasts and related multiples. Combining the two aspects implies an estimate of the stock's terminal value given a predetermined date. Second, the method avoids a growth parameter, and thus only one parameter is present, namely the cost-of-capital, r. Which leads to a final observation: the real problem at hand can focus on the implied r given the current P. Theis overall method to formal equity evaluation becomes essay to appreciate. And it provides an opportunity to highlight DPI: the foregone earnings attributed to the pre-horizon expected dividends corrects for what the thermal value would have been in if the pr0ojeted dividends had been reinvested rather than paid our (in expectation).

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Appendix

This appendix is designed to complement the main body of the article by providing a systematic comparison of how major finance and accounting textbooks treat the four dominant equity valuation models including the Present Value of Expected Dividends (PVED), the Residual Income Valuation (RIV), the Discounted Cash Flow (DCF) model, and the Capitalized Expected Earnings (EPS-Cap) model. Whereas the main discussion develops theoretical arguments and practical critiques of these approaches, the appendix functions as a reference map that documents the precise ways in which leading texts motivate, implement, and qualify each model.

The appendix is organized in a highly structured format. For each valuation model, the treatment is divided into four categories: Motivation, Forecasted Items, Growth and Risk, and Practical Limitations. Each category aggregates the perspectives of eight widely used textbooks. Importantly, the appendix does not merely reproduce textbook summaries but presents them in a parallel structure that facilitates cross-model and cross-textbook comparison. For example, the PVED model's emphasis on dividends as tangible cash flows can be juxtaposed with RIV's reliance on clean surplus accounting, while DCF's cash is king orientation can be contrasted with the Multiple model's compression of growth and risk expectations into a single ratio.

Overall, the appendix should be read as a descriptive synthesis rather than a prescriptive statement. It anchors the evaluative discussions in the main article with clear textual evidence, showing not only how these valuation models are conventionally taught but also where their conceptual and practical tensions lie.

Textbooks

#1 Stephen Penman: Financial Statement Analysis and Security Valuation

#2 Aswath Damodaran: Applied Corporate Finance & Investment Valuation

#3 Palepu, Healy, and Peek: Business Analysis and Valuation

#4 Easton, McAnally, Sommers, and Zhang: Financial Statement Analysis and Valuation

#5 Wahlen, Baginski, and Bradshaw: Financial Reporting, Financial Statement Analysis, and Valuation

#6 Brealey, Myers, and Allen: Principles of Corporate Finance

#7 Ross, Westerfield, and Jaffe: Corporate Finance

#8 Aswath Damodaran: Tools and Techniques of Financial Statement Analysis

Present Value of Expected Dividend (PVED) Model	
Motivation	**Forecasted Items**
#1 • Dividends represent the actual cash returned to shareholders, directly defining intrinsic value. • The model is grounded in a simple present value relationship, making it conceptually straightforward. **#2** • It values equity based on distributions to shareholders, avoiding assumptions about reinvestment. • Best suited for mature firms with stable, predictable payout policies. **#3** • It links shareholder wealth directly to dividends, the cash flows investors actually receive. • Since all value ultimately comes from dividends, it serves as a logical starting point for equity valuation. **#4** • Based on the principle that a share's value equals the present value of future dividends, which are the ultimate returns to shareholders. • It aligns with the notion of shareholder value maximization. **#5** • Dividends are observable cash flows and less prone to accounting distortions than earnings. • The model works well for firms with stable dividend records. **#6** • It values stock through tangible cash distributions, avoiding reliance on uncertain capital gains. • Provides a solid theoretical foundation by tying value to actual investor returns. **#7** • It links stock price to expected dividend flows, the measurable benefits of ownership. **#8** • By focusing on investors' cash receipts, it is intuitive and easy to communicate, especially for valuing established, income-oriented companies.	**#1** • Analysts must forecast the stream of dividends and their timing, discounting them at the cost of equity. • This requires understanding the firm's dividend policy. **#2** • Dividends must be projected for each period, along with the long-term growth rate and the cost of equity. • Forecasts should align with expected earnings and payout ratio. **#3** • Analysts need to project future dividends based on earnings, payout, and reinvestment. • They must also estimate the cost of equity and long-term dividend growth. **#4** • The model requires forecasting dividends over the explicit horizon, a terminal dividend growth rate, and the cost of equity. **#5** • Analysts must forecast dividends and their timing, assume perpetual growth after the forecast horizon, and apply the cost of equity as the discount rate. **#6** • Dividends should be projected for each year, with a perpetual growth rate beyond the horizon and an appropriate discount rate. • Growth assumptions should match long-term economic trends. **#7** • Analysts forecast dividends each period, a long-term growth rate, and the cost of equity. • Growth must be consistent with reinvestment and profitability. **#8** • The model requires projecting the amount and timing of dividends, a sustainable long-term growth rate, and the cost of equity. • Forecasts should reflect payout history and earnings prospects.

Growth and Risk	Practical Limitation
#1 • Dividend growth is linked to ROE and retention via the sustainable growth rate, with long-run growth converging to fundamentals. • The cost of equity is usually estimated using CAPM. **#2** • Growth can be estimated by sustainable growth, reinvestment × return on capital, or near-term analyst forecasts, with long-term growth converging toward economy-wide levels. • Risk is captured mainly by CAPM, though multi-factor models or implied cost of equity may also be used. **#3** • Growth is estimated from the sustainable growth rate, converging to a stable level in terminal value. • Cost of equity is derived from CAPM. **#4** • Dividend growth comes from earnings and payout ratios or sustainable growth; short-run forecasts may use analysts, with long-run growth tied to fundamentals. • CAPM is the standard method for estimating the cost of equity. **#5** • Growth reflects earnings growth and payout policy through sustainable growth, with long-run assumptions near GDP plus inflation. • CAPM is applied to estimate the cost of equity. **#6** • Growth is based on sustainable growth, and constant-growth PVED requires $g < r$, with long-run growth below the economy's rate. • Risk is measured with CAPM, though historical averages can be a rough benchmark. **#7** • Growth comes from sustainable growth, and in the constant-growth model g must be less than r. • CAPM is adopted for cost of equity. **#8** • Growth is estimated via sustainable growth or explicit forecasts of earnings and payout ratios, with terminal growth aligned to sustainable industry and economic conditions. • Cost of equity is estimated with CAPM or, when necessary, a build-up method.	**#1** • The model requires accurate dividend forecasts, which is difficult for firms with irregular or unpredictable payouts. • It is less practical for companies that retain most earnings and reinvest in growth, since dividends may not capture underlying value creation. **#2** • It is unsuitable when dividend policy is not clearly tied to long-term profitability, especially in high-growth or non-dividend-paying firms. • Results are highly sensitive to small changes in growth and required return. **#3** • The model depends on stable, predictable dividends, making it unsuitable for firms with low or volatile payouts. • For low-payout firms, dividends may understate the value created by retained earnings. **#4** • It is impractical for growth firms that reinvest heavily instead of paying dividends. • Strong long-term growth assumptions are required, which are difficult to justify. **#5** • The model is less effective when dividends are volatile or discretionary. • Its reliance on a stable long-term growth rate is often unrealistic in fast-changing industries. **#6** • It assumes dividends grow at a constant rate indefinitely, which rarely holds in practice. • The model breaks down when firms pay no dividends or face declining payouts. **#7** • The model depends heavily on the relationship between required return and growth rate. • It cannot be applied to firms with irregular or nonexistent dividends. **#8** • It is impractical for companies that reinvest most earnings, as it ignores retained earnings' contribution to value. • Small errors in r or g estimates can cause large swings in valuation, reducing reliability.

Residual Income Valuation (RIV) Model	
Motivation	**Forecasted Items**
#1 • It links valuation directly to book value and residual earnings, making it more reliable than DCF when free cash flow is unstable. • Accrual accounting enables earlier recognition of value by focusing on profitability and investment growth. • Less reliance on terminal value reduces the risk of inflated valuations. **#2** • It shows directly whether a firm generates returns above its cost of capital. • The model is versatile, applicable at both firm and equity levels, and widely used in incentive and performance evaluation systems. **#3** • Sustained abnormal ROE reflects durable competitive advantage. • The model is suitable when dividend payouts are irregular and connects internal analysis with external valuation. **#4** • It integrates with clean surplus accounting, ensuring consistency between book equity and valuation. • Value tends to converge toward book value, limiting dependence on speculative long-term assumptions. **#5** • ROE as a driver of abnormal earnings makes the model intuitive for analyzing performance. • It remains useful when dividend forecasts are unreliable. **#6** • It clarifies why reported accounting earnings do not fully capture firm value. • It is an effective alternative when dividends or free cash flows are not reliable. **#7** • By focusing on earnings beyond the capital charge, the model provides intuitive economic logic. **#8** • It highlights value-creating activities rather than simply tracking cash flows.	**#1** • It requires projecting residual earnings for each future period, which involves forecasting net income, book value of equity, and the cost of equity. • Book value forecasts should follow the clean surplus relationship. **#2** • Analysts must project annual residual income, book value over time, and the cost of equity. • Forecasts should also include the terminal assumption when residual income converges to zero. **#3** • It requires forward-looking estimates of abnormal ROE and beginning book values, updated through dividends or retention. **#4** • Future abnormal earnings must be projected along with changes in book value through retained earnings, requiring forecasts of net income and dividends. **#5** • Forecasts include net income, beginning book values, the required return on equity, and expected dividends. **#6** • It needs estimates of earnings, cost of equity, and book value of equity to calculate residual incomes. **#7** • Analysts must project earnings, the cost of equity, and equity book value, which depends on payout policy. **#8** • It requires projecting earnings, equity capital, return on capital, and cost of equity to derive residual incomes.

Growth and Risk	Practical Limitation
#1 • The cost of equity is estimated using CAPM. • Growth should be tied to ROE and reinvestment policy, with a fade assumption in the long run. **#2** • Risk is captured through CAPM, but alternatives such as implied cost of equity or multi-factor models are also possible. • Growth is best modeled as reinvestment rate × return on capital. **#3** • Risk is reflected in the cost of equity from CAPM. • Growth is estimated with the sustainable growth formula. **#4** • CAPM is used to determine the cost of equity. • Growth is linked to ROE × retention, with analyst forecasts for the short run and fade assumptions for the long run. **#5** • The cost of equity is estimated with CAPM. • Growth comes from analyst forecasts in the short run, moving to conservative long-term assumptions. **#6** • CAPM is applied to estimate cost of equity, with adjustments for smaller or private firms. • Growth is derived from sustainable growth, with modest long-term rates aligned to the economy. **#7** • CAPM is the standard method for cost of equity. • Growth is based on ROE × retention, with caution that it should not exceed economic growth. **#8** • Cost of equity is estimated via CAPM, with adjustments for specific risks. • Growth aligns with sustainable growth, avoiding overly aggressive assumptions.	**#1** • The model is highly sensitive to the quality of reported accounting numbers. • Its validity depends on the clean surplus relation, which can be violated by items bypassing the income statement. **#2** • Reliability depends on accounting data quality, and aggressive reporting practices can distort results. • Estimating the cost of equity is difficult, and small changes in this input can significantly affect valuation. **#3** • It depends on the persistence of abnormal earnings and the clean surplus relation. • Forecasting abnormal ROE is uncertain, as competitive advantage can erode faster than expected. **#4** • Reported data require adjustments to remove transitory items. • Application is difficult if analysts lack reliable ROE forecasts or if capital structure changes significantly. **#5** • The model needs consistent accounting for earnings and book value, as deviations from clean surplus bias results. • Forecasts may be overly optimistic, and abnormal earnings often fade quickly. **#6** • Heavy reliance on accounting-based inputs makes it sensitive to reporting errors. • Small mistakes in cost of equity or long-term growth estimates can greatly impact valuation. **#7** • Dependence on stable accounting data makes it less suitable for firms with volatile or opaque statements. • Forecasting long-term ROE and retention involves substantial estimation error. **#8** • Its effectiveness is limited by the availability and comparability of financial data. • Assumptions about abnormal earnings persistence are judgmental and prone to optimism.

Discounted Cash Flow (DCF) Model	
Motivation	**Forecasted Items**
#1 • The model provides a theoretical foundation: intrinsic value equals the PV of future CF. • It is widely accepted because it focuses on the fundamental drivers of value. #2 • Its main appeal is consistency with the principle that value comes from discounted expected cash flows. • It forces explicit assumptions about growth, profitability, and risk, improving analytical discipline. #3 • It captures the value of operating assets through projected free cash flows, making it adaptable across firms regardless of dividend policies. • The approach ties valuation directly to business fundamentals. #4 • Its appeal lies in grounding in economic theory and flexibility in handling different horizons and terminal values. • It works best when free cash flow can be estimated reliably. #5 • DCF highlights the direct link between cash generation and firm value, reflecting what investors ultimately receive. • It integrates accounting forecasts with financing assumptions for a forward-looking valuation. #6 • It is regarded as the gold standard of valuation because it applies the net present value principle, the core of modern finance. • It enforces consistency between investment, financing, and payout assumptions. #7 • The model provides an internally consistent framework grounded in time value of money and risk-adjusted discounting. • It is adaptable to valuing equity and firms. #8 • It is reliable because it incorporates timing, magnitude, and risk of cash flows. • Its universal applicability makes it suitable across industries and investments.	#1 • Analysts must forecast free cash flows to equity or the firm over a defined horizon, discounted at a risk-adjusted rate. • This requires projecting revenues, expenses, taxes, reinvestment, and financing flows. #2 • Free cash flows (FCFE or FCFF) must be forecasted, adjusting for taxes, non-cash items, capital expenditures, and working capital changes. • A terminal value must be estimated using perpetual growth or exit multiples. #3 • Forecasts should cover after-tax operating cash flows, reinvestment needs, and a terminal value aligned with the firm's strategy and investment plans. #4 • Analysts must project free cash flows across multiple periods and a terminal value. • Forecasts must be consistent with revenues, expenses, and the firm's business model. #5 • Forecasting free cash flows requires revenues, costs, tax effects, reinvestment, and financing flows. • Both interim cash flows and terminal value must be included. #6 • The model involves projecting future cash flows and a terminal value, including revenues, costs, taxes, capital spending, and working capital changes. #7 • Analysts must forecast cash flows for each period and a terminal value, reflecting realistic growth and reinvestment. #8 • It requires estimating the size and timing of expected cash flows and a terminal value to capture subsequent periods.

Growth and Risk	Practical Limitation
#1 • The discount rate is typically estimated with CAPM. • Growth is derived from ROE × retention or from analyst forecasts, with long-run fade assumptions. **#2** • Risk is captured mainly with CAPM, but alternatives include multi-factor models, APT, or implied costs of equity. • Growth comes from reinvestment × return on capital or long-run convergence to industry averages. **#3** • The discount rate is usually based on CAPM. • Growth may be estimated by sustainable growth or analyst forecasts in the short term, fading toward equilibrium in the terminal period. **#4** • Required return is estimated with CAPM. • Growth is projected from earnings and payout ratios or sustainable growth, using analyst forecasts for near-term estimates. **#5** • The discount rate comes from CAPM, adjusted for company-specific risks if needed. • Growth is estimated from fundamentals but should align with macroeconomic and competitive constraints. **#6** • CAPM is most often used, with adjustments for size, country, or project risk premiums. • Growth can be estimated from historical patterns, fundamentals, or analyst forecasts. **#7** • The discount rate is derived from CAPM. • Growth can be estimated by sustainable growth or historical trends, with terminal rates conservative and below economic growth. **#8** • Risk-adjusted discount rates are usually based on CAPM, with firm- or project-specific adjustments. • Growth can be drawn from reinvestment rates and returns, historical performance, or forecasts, with terminal growth tied to economy-wide stability.	**#1** • The model is highly sensitive to assumptions for growth and discount rates. • Forecasting free cash flows far into the future is difficult when business models or competitive positions change. **#2** • It relies heavily on long-term forecasts, which are uncertain and prone to bias. • Terminal value often dominates results, creating risk from unrealistic perpetual growth assumptions. **#3** • Accurate forecasts of free cash flows require deep knowledge of operations and markets. • Results can be distorted if terminal value becomes too large a share of overall valuation. **#4** • Forecasts must remain consistent with profitability, investment, and financing assumptions. • Near-term analyst inputs may be optimistic, inflating valuations. **#5** • Valuation accuracy depends heavily on forecast quality for cash flows, discount rates, and growth. • Sensitivity to these parameters means even small errors can mislead results. **#6** • The model is extremely sensitive to growth and cost of capital assumptions. • Terminal value often accounts for most of the present value, making the model highly dependent on that estimate. **#7** • It requires detailed forecasts that are often difficult to make reliably. • Long-term growth assumptions must be conservative to avoid unrealistic valuations. **#8** • Estimating discount and growth rates over long horizons is difficult. • The model is less suitable for firms with unstable or unpredictable cash flows, such as startups or cyclical businesses.

Capitalized Expected Earnings (EPS-Cap) Model	
Motivation	**Forecasted Items**
#1 • The model is attractive because it links valuation directly to accounting earnings, a familiar and widely reported figure. • Multiples offer a shorthand valuation method useful for quick comparisons across similar firms.	#1 • Analysts must forecast sustainable, forward-looking earnings, either from comparables or derived from fundamentals.
#2 • The approach is widely used in practice because it is simple, easy to communicate, and grounded in observable market data. • With proper adjustments for growth, risk, and accounting, multiples can yield results consistent with DCF.	#2 • A forecast of the earnings base is required—trailing, current, or forward EPS—with forward measures preferred. • The capitalization rate must also be estimated.
#3 • Earnings multiples summarize the market's expectations for growth, profitability, and risk in a single number. • They are easy to use for benchmarking against peers.	#3 • Analysts must project sustainable earnings and determine a P/E multiple that reflects growth and risk.
#4 • Multiples incorporate market consensus, reflecting collective expectations about future performance. • They are particularly effective when applied to forward-looking earnings.	#4 • The approach requires near-term EPS forecasts and the estimation of an appropriate multiple.
#5 • Simplicity and reliance on well-understood metrics make this model highly practical. • When based on sustainable earnings, capitalization can approximate intrinsic value with less effort than DCF.	#5 • Analysts must estimate sustainable EPS reflecting ongoing operations, along with a capitalization rate.
#6 • The method distills complex valuation factors and is widely used in investment banking and equity research for its speed and clarity.	#6 • Earnings per share must be forecast, and an appropriate P/E multiple selected for capitalization.
#7 • It provides a quick and intuitive valuation method based on observable data.	#7 • EPS must be estimated—historical, current, or forward-looking—paired with a P/E ratio reflecting risk and growth expectations.
#8 • Multiples are favored because they require fewer assumptions about the distant future than cash-flow models. • They work best for stable, mature companies where earnings reliably indicate performance.	#8 • Analysts must forecast normalized forward EPS and choose a multiple that incorporates growth, payout, and risk factors.

Growth and Risk	Practical Limitation
#1 • The cost of equity underlying multiples is usually estimated from CAPM. • Growth is tied to fundamentals, mainly sustainable growth, while multiples reflect expectations about abnormal earnings persistence versus convergence of ROE to r. **#2** • CAPM is the main method for estimating risk, with implied costs or multi-factor models as alternatives. • Growth can be modeled from fundamentals or near-term analyst forecasts, and the P/E can be linked to Gordon logic. **#3** • Risk for interpreting P/E is derived from CAPM. • Growth should be grounded in sustainable growth or supported by analyst forecasts. **#4** • The required return is estimated through CAPM or comparable models. • Growth is drawn from sustainable growth or market expectations. **#5** • Risk is typically estimated with CAPM, sometimes adjusted for firm-specific factors. • Growth embedded in P/E comes from ROE $\times$ retention or vetted analyst forecasts. **#6** • Discount rates come from CAPM, with size or country adjustments if needed. • Growth is based on sustainable growth or analyst expectations, again linked to Gordon logic. **#7** • The discount rate is generally obtained via CAPM. • Growth can be estimated from sustainable growth or analyst trends, with stable-growth assumptions requiring $g < r$ and convergence to economy-level growth. **#8** • CAPM underpins the discount rate, with adjustments for size, liquidity, or country risk. • Growth can be estimated from fundamentals, sector outlooks, or forecasts, with terminal growth constrained to sustainable levels.	**#1** • It assumes abnormal earnings persist predictably, which may not hold in competitive markets. **#2** • Reliability suffers when near-term earnings are volatile. • The model is highly vulnerable to misestimation of long-term growth rates, which can distort justified multiples. **#3** • Multiples compress all expectations of growth and risk into a single figure, which can obscure drivers and perform poorly when earnings are very low or negative. **#4** • Reported earnings with one-time items or distortions can mislead, since the model assumes earnings are sustainable. **#5** • Significant capital structure changes undermine the model, and it cannot handle negative or near-zero earnings without adjustment. **#6** • It is very sensitive to errors in growth and discount rates. • Its stable-growth form assumes constant profitability, which is often unrealistic. **#7** • The model assumes a constant growth rate less than the cost of equity, and becomes unreliable when growth is unsustainable or earnings are cyclical. **#8** • It depends heavily on normalized earnings and is especially weak when applied to firms in transition with unpredictable results.