Portfolio123 Virtual Strategy Design Class
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Topic 1C – From EPS to Workaday Real-World Analytic Ideas

We started with the idea that a stock price is equal to the present value of expected future dividends, as described in the Gordon Dividend Discount Model (DDM). It's a great formula. It's logically perfect. But in the real world, it's perfectly unusable for reasons explained in the accompanying article.

In Topic 1B, we started out trek from the ivory tower to reality by switching our focus from dividends to earnings. The good news is that what we saw there started to resemble what we see in everyday fundamental analysis, but we haven't yet gotten all the way there. We complete that trip now.

The idea, here, is not necessarily for you to know how, for example, to use ROE or balance sheets or technical analysis – we'll get to those and more – but to understand the logical link between all these things and DDM. It may come off as a bit strange. You never hear real-life investing superstars talking this way. But that's because to them, it's implicit, so obvious, it need not be spelled out. But it is there. It underlies everything they do.

These logical paths from idea to DDM discussed here is what enables you to take a model that was tested in dataset A (the past, the only dataset we can use for testing) and if satisfied, carry those ideas over into a new and often different (sometimes incredibly different) dataset B, the future.

Sometimes, the logical path is short, as in use of a PE or PEG ratio. Other times, the path can be longer, as with sma(50)/sma(200), or MACD. The length of the path is irrelevant. What's important is that it be there, and that you be able to recognize it as you work with factors and formulas.

Starting With a Bang: Technical Analysis

When considering how I would approach this material, I had initially intended to present this as the last topic. On reflection, though, after all the theory discussed in the first two articles, it occurs to me that now would be a good time not just to enter the real world but to bang down the door and bull our way in. So let's jump now to the style that might seem as far removed from theory as possible.

Imagine a stock whose price has been stable suddenly jumping up above the upper boundary of what had been its trading range. Perhaps the 50-day simple moving average crossed above the 200-day average. Maybe the price broke above the upper Bollinger Band. Also, let's assume that whatever happened was "confirmed" by Chaikin Money Flow indicators. Can we expect the stock to rally going forward?

If we want to be strict logicians here, we absolutely cannot expect further stock price strength based on such factors or any other indicators or patterns. Price movements in the past do not cause price movements in the future.

"Phew," say the Value Police. The crackpots aren't going to come off looking good.

Actually, though, it's not so simple.

Let's try to imagine why a stock might show what some might label "technical" strength. It's not random. We already know enough to make reasonable assumptions.

If a stock breaks above a trading range, absent comparable movement by the market as a whole, we might infer that investors who look at fundamentals saw reason to revise their assumptions and now notice that the present value of expected future dividends (or EPS) is higher than it once was. We may not be able to get more specific. We may not talk to any such investors. But unless we throw up our hands and conclude that the market is completely random (a lot of professors used to do that, but I think that view is becoming increasingly discredited), then we are justified in assuming that those who know, or those who think they know, or who think they know which others are in the know, have recalibrated their expectations.

It's just this simple. Whether practitioners of technical analysis acknowledge it or not (there are many in both camps), they are, in essence, piggybacking on the fundamental analysis done by others. Some openly combine fundamental and technical factors. Many don't but wind up identifying and working with observed price-volume patterns they believe are consistent with behavior by investors collectively deciding to bid the stock price upward. Whether they succeed or not will depend, not on whether technical analysis is voodoo (it isn't) but on (i) whether the fundamental expectations upon which they've piggybacked pan out, and (ii) whether the visual or data patterns upon which they rely are, indeed, properly reflective of the investor behavior they expect it to reflect.

By the way, this sort of thing can get quite complex. The market doesn't turn bullish or bearish as if a light switch were being flipped on or off. Investor sentiment typically evolves through give and take. For example:

1. Some investors revise earnings expectations upward.
2. The price starts to rise.
3. Others who have held for a while see a profit-taking opportunity and grab it.
4. The stock "corrects."
5. Others who are familiar with the good news followed by correction initial tendencies decide, perhaps based on historical experience with the pace of the correction and the related volume trends, that the stock has corrected enough and start to jump in, happy for a chance to do so after having missed the first move.

6. The rally picks up steam as more and more investors notice that the stock price is behaving consistent with a familiar pattern that may not reveal the actual nature of the fundamental event but which strongly suggests that the market is on to something good.
7. An experienced chartist seeing the impact of all this may recognize something familiar, perhaps the early stage of a pattern that typically precedes more extended rallies.
8. Etc., etc., etc.

Again, good technical analysis hinges on relevant fundamental events combined with recognition, in the price and volume trends, of rational investor responses. Successful technical analysis does not involve tealeaves, tarot cards, etc. It involves development of a sound narrative to explain investment community behavior in response to events. And event number one is something along the lines of what we've been talking about – an understanding of and response to the factors that influence stock prices.

With that framework in mind, let's go back to fundamentals (my personal comfort zone) and consider how Dividend/EPS-based valuation can be stretched into other fundamental factors.

PS, Price-to-Sales

Back at the turn of the century, a lot of investors valued stocks on the basis of sales, and a lot of them got their heads handed to them. Hence PS went out of favor for a while, having been seen as a tool for the unscrupulous to hype the shares of companies that had no earnings.

That's a shame. PS is a great ratio. It can be misused, much the way fire can be misused. But also as with fire, we should not allow ourselves to be deprived of enormous benefit because of the misfeasance of creeps and dummies.

Let's go back to basics:

- $P = D / (k - g)$
    - You know this one; price equals dividends divided by required return less expected growth
- $P = (E * dp) / (k - g)$
    - You know this one too. Price is EPS times dividend payout ratio divided by the other stuff
- $P = ((S * M) * dp) / (k - g)$
    - This one is new. S is Sales. M is margin. We know that profit is sales times margin.
    - Therefore, we can re-write the core valuation formula by substituting (S * M) for EPS (obviously, of course, we'd ultimately have to get

consistent in termr of whether we're doing gull values or per-share values).

Now, just as we derived a theoretically correct PE ratio, we can use the same sort of algebra to divide each side of the equation by S and wind up with a theoretically correct PS ratio.

- PS = (M * dp) / (k – g)

That's a big deal, a very big deal. First it tells us that higher margins and or higher rates of expected growth exert upward pressure on PS ratios, and vice versa. And perhaps more important, it gives us a theoretically rational tool for valuing companies that are losing money or whose profits are so small as to be meaningless.

To solve the loosing-money problem, we could concoct a multi-stage model where we'd assume a positive margin a few years out, and then present-value the answer back to today, that could work. But in a practical sense, we don't have to take the trouble to do that. We just need to introduce one mega game-changing idea . . .

It's the Unknown Future: i.e., these are Assumptions

Now, it's time to jump into the deep end of the stock-market pool. That means we get rid of the arm-floats, the inflatable chest vests and the belly boards, and put on our grown-up bathing suits. We do that by noting and remembering and really taking to heart words often attributed to John Maynard Keynes but really belonging to British philosopher-logician Carveth Read: "It is better to be vaguely right than precisely wrong." That's critical when investing in stocks because the future is uncertain meaning we cannot possibly be precisely right.

That hard part is recognizing that the idea of being vaguely right is not an invitation for anything and everything. It works if your assertion is generally consistent with the core idea of stock pricing as based on the present value of future dividends. In other words, you can fudge, as long as the fudge points you logically in the direction of the present value of future dividends.

Wit this in mind, let's go back to PS and see how it could move us in the direction of present value of expected future dividends. We understand at the outset that dividends come from earnings (EPS) and that earnings start with sales. So we have our initial logical connection. But we must make sure we don't fall into the trap of using PS as a basis for pumping overpriced stocks. Accomplishing that means having a good reason why we need an alternative to PE.

Imagine a company whose last five annual EPS figures look like this: 2.10, 1.45, 13.88, -6.50, and 8.14. Suppose 8.14 is the most recent figure and the stock price is $30. A quick glance suggests the PE is 3.7, which is very low and potentially signifying a screaming Buy.

But is that so? We're not interested in reported EPS for its own sake. In fact, we don't care about reported EPS at all. We use it if and only to the extent it helps us formulate a reasonable assumption about future EPS, which is what's relevant. Suppose I tell you that of the $8.14 figure includes $7.00 per share comes from a one-time gain relating to the sale of an idle asset. And the $6.50-a-share loss reported in the prior year might amount to $1.35 from operations and a deficit of $7.85 a share related to costs of closing a factory. And knowing what you do now, do you really think the $13.88 figure for two years back is legitimately representative of what the company might earn in the future, of the stream of future EPS, or the stream of potential future dividends.

There are countless reasons like this why EPS may not be usable as a factor in stock valuation. Early-stage companies that typically lose money because they haven't yet grown to the point of leaving fixed costs in the dust are another example. Sales is a business-related metric that might be much more stable (although we would have to be aware of the trend-busting impact of acquisitions, divestitures, exceptionally large orders, etc.). Also, if EPS is volatile due to non-recurring matters, so, too, would be the case with net margin. But gross margin or operating margin might be more stable and relevant. We could use one or both of those.

From this, we might reason that PS, analyzed in terms of, say, operating margin and sales growth prospects, could point us in the general direction of situations where stocks prices are well aligned with future dividend prospects (albeit with the link stretching from sales to operating margin to eventual normal net margin to eventual normal EPS and then on at some point to dividends). This is how a rational investor could justify using PS as a substitute for a non-meaningful PE, or even as a confirmation for a suitable PE. The key is to understand what PS tells you and the logical path from it to present value of future dividends.

Spreading our Wings

The logical process illustrated above can be applied in many other ways.

Cash flow, for example, might be helpful if we believe it, rather than EPS or together with EPS, helps us get a good sense of future earnings and hence dividend-paying capability. But we should do this strategically rather than naively. EPS, despite the impact of such non-cash items as depreciation, is based on accounting models that help companies match revenues and expenses, a sometimes complex task when, as often happens, companies spend money in a particular period that will enable them to generate revenue in many additional periods (cash flow alone might make the company look too weak in the year of the big spend, but too strong in subsequent years, when subsequent revenues are not matched with that big but relevant cash outlay).

Debt is relevant because it relates to the potential variability of future earnings/cash flows/dividend-paying capability. Liquidity (current ratio/quick ratio) likewise signifies risk to the cash flow stream. Such measures may not impact D, E, S, M, dp, or g. But they sure as heck impact k.

Return on equity is a hugely important metric. It indicates a company's ability to make money from the capital at its disposal. Higher ROE companies tend to have more capacity to generate future earnings, and by logical extension, dividend growth. And although it's beyond the scope of this article to present the mathematical proof, be aware the higher returns in equity, relative to cost of capital, translate to higher price-to-book ratios.

Earnings quality is vital. The academic research that launched this area was not couched in terms of finger-pointing or gotcha. It was framed in terms of the impact of relevant factors on earnings persistence, the extent to which we could extrapolate from current results to future levels of earnings and, by extension dividends. Artificially boosting earnings by torturing accounting rules (usually relating to accruals) is a problem because earnings thusly inflated are less likely to persist into the future, meaning potential future earnings, and of course dividends, is less likely to materialize.

What about analyst estimate revision, something that often is prominent in the financial news? Is this relevant to the present value of future dividends? Obviously, yes. And increase in estimated EPS means a potential increase in the stream of future dividends and we know that can't hurt. Often, though, shares move to a degree that seems out of proportion, perhaps even extreme, relative to the potential upward revision in any formal valuation model. That, actually, is a perfect lead in to the next and final installment in this series, which will deal with the role of sentiment in investment theory. But before we get there, let's conclude this discussion with a summary of how all this gets played out in terms of "investment styles."

So Anything Goes, Right? No!

It's tempting to consider the variety of things investors do that, although not openly tied in to the present value of future dividends, are, in fact logically related and conclude that anything goes. Actually, this goes back to the message-board quote with which I launched this series; "if you are creative enough, you can make up a theoretical basis for almost anything."

So this would seem a good time to see what bad ideas might look like.

- **It's about sustainable relevant trends, not numbers.**

This refers to the example I presented in the PS discussion and the 3.7 PE that was meaningless. This was always a big issue, but nowadays, it's gotten much worse

given the prevalence of automation and robo-research and robo-analysis; those computer generated "reports" you see (and can often buy) that wax poetic about very high or very low PEs based on EPS numbers many fail to recognize as not being representative of anything relating to the company's long-term ability to produce and grow EPS and dividends.

It also refers to trends viewed without reference to the reasons that underlie them. Do rapidly growing sales come from rapid and sustainable business expansion (emphasis on sustainable), or an acquisition, or an atypically large order, or a cyclical peak that's about to give way to a downturn? You cannot tell from looking at a number. You can only tell by allowing the need to relate the number to the present value of future dividends to motivate you to look further and to put the number in its proper context.

- **It's about the relationship between share prices and future dividend-generating potential, not valuation metrics**

Is it possible that a stock with a PE of 25 could be undervalued while a stock with a PE of 11 is overvalued? Yes, absolutely. The PE, standing on its own, means nothing. We need to understand how PE relates to the present value of expected future dividends, as discussed in the second installment, and consider whether the major company-specific determinant of PE, growth, supports the ratio in question.

Might a value investor justify buying a stock with a PEG (PE-to-Growth) ratio of 2.25 while scorning a stock with a PEG ratio of 0.85. Yes, of course. Remember the PE equation. PE does not depend only on growth. It also depends on payout ratio and required return. (So PEG, per se, is really folklore, but as folklore goes, it's benign since it inadvertently nudges you in the right direction.) More important, though, is how you get the numbers. Does the PE you're using make sense? Which EPS figure? the most recent 12 months (a commonly used figure on financial web sites and computerized robo reports) may not be as representative of future sustainable dividend-generating capability. An estimate of EPS for the current year or the next year. May be more representative And which growth rate is being use? Most sources I've seen counsel investors to use a historic growth rate over the past year or the past five years (web data presentations and robo reports often do this)? But is that really representative of future EPS and dividend paying capabilities? Be careful about the PEG ratios you see, and feel free to modify on your own if the packaged ratios you see are based on numbers that are not properly attuned to factors that shed light on the present value of future expected dividends.

You've heard that "cash is king" and probably seen much suggesting that you use price to cash flow ratios rather than PE. As explained above, however, cash flow can be volatile year to year due to reasonable, and even highly desirable reasons, such as capital investment. The relationship between cash flow and the company's long-term ability to pay dividends is not nearly as clean-cut as many assume.

- **It's about risk to the potential future dividend stream, not about debt**

Fear of debt is a commonplace consequence of losing track of the relationship between share prices and future dividend-generating capability. Whether or not debt is troublesome is based on whether it's a threat to future dividend-paying capability, either through raising the risk of bankruptcy or consuming too much cash to the point that dividends can't be paid. The answers vary from business to business and company to company. Much relates to the stability of revenues.

Note, too, that long-term debt is a permanent form of capital. So don't sit around calculating whether you think the company will be able to pay it all off when it comes due. Most can't and ex a deliberate decision to revise the capital structure, most have no intention of doing so. The norm is to refinance debt, often before the due date, and whether this can happen depends on whether the credit market regards the company's business performance as credible.

So ultimately, don't worry about ratios in isolation. Interpret them in light of the business. Although credit markets don't care about the present value of future dividends per se, their concerns are compatible with ours so if you keep present value of future dividends as the pot of gold at the end of your analytic rainbow, you'll get to the right answer.

- **It's about the relationship between the stock price and the present value of expected future dividends, not about your "style" of choice.**

There's little in the world of investing that's more ridiculous than debates, arguments, verbal warfare, etc. over different "styles." There is one destination at which all should aim, the present value of future expected dividends. The routes from here to there are spectacularly varied, as we've seen. None are a sure thing (since we don't know the future but can only develop assumptions). Any approach that is consistent with your temperament is fine, as long as it ultimately points you toward the destination.

Growth investors are those who are inclined to use historical growth rates as important starting points in developing the necessary assumption. Whether they succeed depends on how effectively they interpret the numbers and their willingness to make sure the stock price is aligned to whatever conclusions they draw from the growth data.

Value investors use valuation metrics as the starting point. But whether they make money dong this or wind up buying garbage that deserves the low ratios that prevail or missing out on stocks they mistakenly believed to be overpriced depends on whether they understand growth and ultimately, the company's future dividend-paying capabilities.

Momentum investors and technical analysts are those who, as we saw, piggyback on the fundamental work done by others as discerned from their interpretation of investor behavior.

Everybody does the same thing, or at least they should if they want to succeed. The method is a matter of taste. Disdaining someone else for the style they choose makes as much sense as disdaining one who prefers Merlot to Chardonnay.

Best of all is to be aware of all styles. If you're a value investor, don't you want stocks that also appeal to growth investors? The difference between you and them is noting more than a different route chosen to get from the present to the ultimate goal, the present value of future dividends. And given that stock prices are set by supply and demand, it's obvious that the more different kinds of investors who may demand your stock in the future will give you better profit taking opportunities. And when you do take profits, you don't have to agree with the approach used by the one who buys your shares.

So don't worry about which style is which, except as a matter of convenience. Worry about what counts; whether what you're doing bears a logical relationship to the present value of expected future dividends. If you encounter something that helps you form reasonable assumptions along these lines, use it. If not, reject it.

Why Stock Prices are Where They Are

That's familiar. It's the title for Topic A. Notice, though, what is not part of the title. The word "value" is absent.

Does that seem odd? It might. I've referred again and again to the present value of future expected dividends and that's the core of the theory of stock valuation. It's easy to assume that value and price, or fair price are or should be the same thing; i.e. that P = V.

It's not. Mathematically, the correct answer is P < > V. Actually, P = V + SE (which stands for Something Else). The next and final installment will discuss the "Something Else." I gave you a clue above when I referred to sentiment. But no, it's not soft and fuzzy. Actually, it comes from an old but not well known Robert Shiller paper. And ultimately, it adds the element that makes investing so darn much fun. Stay tuned.