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What Does a Price-Earnings Multiple Mean?

An Analytical Bridge between P/Es and Solid Economics

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"Remember, cash is a fact, profit is an opinion."

Alfred Rappaport[1]

- This report aims to provide an analytical bridge between price-earnings multiples and sound economic reasoning by breaking firm value into two components: a steady state and future value creation.
- The price-earnings multiple is the primary method analysts use to value stocks. Yet, most investors don't have a clear sense of what a particular multiple implies about a company's future financial performance and don't understand how multiples change over time.
- The value of a financial asset is the present value of future cash flows. A good discounted cash flow model avoids accounting vagaries, whereas managements can manage or manipulate earnings.
- In assessing capital allocation, consider incremental returns on capital first and growth second. Growth only creates value if the investments generate a return in excess of the cost of capital.

Introduction[2]

The price-earnings multiple remains the primary method analysts use to value stocks.[3] Researchers who surveyed equity research reports found that more than 99 percent of the analysts used some sort of multiple and less than 13 percent used any variation of a discounted cash flow model.[4] Price-earnings multiples may be a common way to assess the attractiveness of a stock, but most investors fail to have a clear sense of what a particular multiple implies about a company's future financial performance and don't understand how multiples change over time.

The sloppy use of multiples is almost everywhere you look. In our opinion, some analysts justify their recommendations with apples-to-oranges comparisons of businesses with different economics, suggest companies should trade at the same multiple as the past without a solid economic justification to do so, and compare price-earnings multiples with growth rates without any mention of the underlying economic returns. Price-earnings multiples are widespread in use yet remarkably poorly understood.

Take as an example two companies, Apple, Inc. (AAPL) and Edison International (EIX), which had the same price-earnings multiple, 12.8, based on year-end 2013 prices and 2014 consensus earnings estimates. Setting aside any perceived mispricing, it stands to reason that the prevailing price-earnings multiple implies radically different outlooks for these two companies. They are in separate sectors (information technology and utilities), with vastly disparate economic returns on capital (AAPL's CFROI® is 25 percent versus EIX's 5 percent), substantial variance in the outlook for earnings growth (the expected 5-year earnings per share growth is nearly 50 percent for AAPL and 7 percent for EIX), and very different capital structures (AAPL has net cash while EIX has a healthy amount of debt).

How can two companies so unalike have the same price-earnings multiple? Contemplating how these two stocks arrive at the same multiple from very different directions provides a mental warm-up for the process of carefully considering what comprises a price-earnings multiple. Without a proper appreciation for the factors that determine a multiple, there is no way to apply it intelligently in exercises of relative or absolute valuation.

The value of a financial asset is the present value of future cash flows. Few serious market practitioners would disagree. But many investors shun models that project and discount future cash flows because they deem them too complicated or sensitive to assumptions. Yet these same individuals seem blithely content to rely on multiples.

Here's the challenge. With discounted cash flow models, the value is sensitive to the inputs. But the assumptions underlying the inputs are explicit. You can compare them to base rates, discuss them, and debate them. With multiples, those assumptions are buried. The assigned multiple becomes a point of persuasion rather than a thoughtful case based on the economic drivers of value.

The goal of this piece is to provide an analytical bridge between price-earnings multiples—really, multiples of any kind—and sound economic reasoning. We'll start by looking at price-earnings multiples through a classic valuation lens, and will examine the two main components of that model. We'll finish by discussing the role of multiples in considering price-implied expectations.

Back to First Principles

A logical and useful place to start untangling price-earnings multiples is the foundational paper on valuation that professors Merton Miller and Franco Modigliani (M&M) wrote in 1961.[5] In it, they addressed a fundamental question: "What does the market 'really' capitalize?" They did not crown a winner among approaches that rely on earnings, dividends, or cash flows. Rather, they showed that all of these methods yield the same result if you address the problem correctly.

In the section that demonstrates this theoretical equivalence, M&M offer a formula that is very helpful for investors. They say that you can separate the value of a company into two parts:[6]

Value of the firm = steady-state value + future value creation

We can define the terms on the right side of the equation even further:

$$\text{Steady-state value} = \frac{\text{Net operating profit after tax (normalized)}}{\text{Cost of capital}} + \text{excess cash}$$

The steady-state value of the firm, calculated using the perpetuity method, assumes that current net operating profit after tax (NOPAT) is sustainable indefinitely and that incremental investments will neither add, nor subtract, value. Using this method implies that NOPAT is constant in nominal terms but that it decreases after inflation is considered.[7]

$$\text{Future value creation} = \frac{\text{Investment} * (\text{return on capital} - \text{cost of capital}) * \text{competitive advantage period}}{\text{Cost of capital} * (1 + \text{cost of capital})}$$

Future value creation boils down to how much money a company invests, what spread that investment earns relative to the cost of capital, and for how long a company can find value-creating opportunities.

M&M note that this formula "has a number of revealing features and deserves to be more widely used in discussions of valuation." Here are some specific ways the equation can help inform our discussion:

- The equation allows you to disaggregate a price-earnings multiple into a commodity component (the first term) and a franchise component (the second term). This lets you understand how much you are paying for future value creation.

- The central importance of return on incremental invested capital becomes immediately clear. If that return is equal to the cost of capital, the value of the equation's second term collapses to zero.

- The formula shows the impact of growth. For companies that have a large spread between the return on invested capital and cost of capital, rapid growth adds a lot of value. For large negative spreads, growth subtracts a lot of value. Whether growth is good or bad is contingent on the incremental return. As M&M write, "the essence of 'growth,' in short, is not expansion, but the existence of opportunities to invest significant quantities of funds at higher than 'normal' rates." The "normal" rate is the cost of capital.

- The equation shows the potential limitations of relative valuation techniques. Comparing two companies in the same industry with different economic characteristics adds little insight.

- The equation provides a quick sense of the expectations built into a stock.

The equation solves for the value of the firm, but it is straightforward to tailor the analysis to the value of the equity only. Since:

Value of the firm = debt + equity

Then:

Equity value = steady state + future value creation + excess cash – debt

Excess cash includes cash, marketable securities, and other nonoperating assets beyond what the company needs to run its operations, less any tax consequences of freeing that cash (for example, U.S. companies owe taxes on cash that they repatriate from foreign countries). Debt includes short- and long-term debt plus any other relevant claims that are ahead of equity, including preferred stock.

In theory, valuing the firm and subtracting debt to arrive at an equity value (unlevered valuation) is equivalent to valuing the equity directly (levered valuation). Appendix A demonstrates this equivalence. In practice it can be challenging to perfectly reconcile the two approaches.

Component I: The Steady-State Value

The steady-state value of a firm is the worth of the business assuming that it maintains its normalized level of NOPAT into perpetuity. A company arrives at its steady-state value when its incremental investments earn the cost of capital. With the second term of the equation collapsed to zero, all of the firm's value falls on the steady state.[8]

Note that this discussion is independent of growth. A company can continue to grow earnings as it invests at the cost of capital. It will just fail to create value, and hence should trade at its steady-state worth. We can readily translate from the steady-state value to a steady-state price-earnings multiple, which is the reciprocal of the cost of equity:

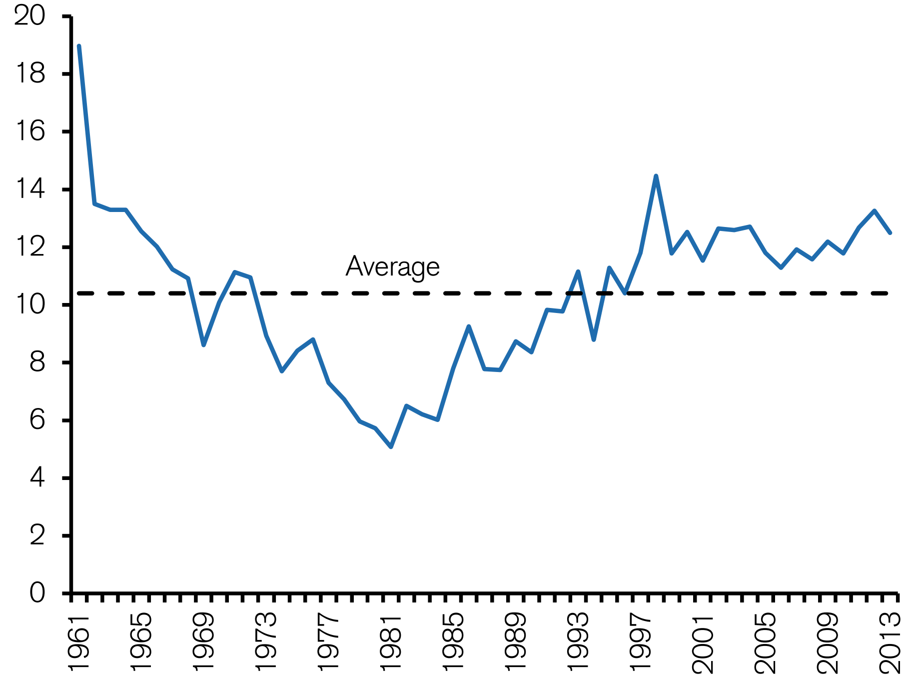
$$\text{Steady-state price-earnings multiple} = \frac{1}{\text{Cost of equity}}$$

As of the beginning of 2014, Aswath Damodaran, a professor of finance at New York University's Stern School of Business, estimated the cost of equity in the United States to be 8 percent.[9] This translates into a steady-state price-earnings multiple of 12.5 times. Appendix B discusses the derivation of the cost of equity.

Simplistically, we can say that the market expects a company to create shareholder value if its stock trades at above 12.5 times current earnings. If the stock trades below that multiple, the market is assuming either no value creation or that future value creation will be insufficient to offset a decline in the current base business. In other words, current earnings are unsustainable.

Exhibit 1 shows the appropriate steady-state price-earnings multiple from 1961 through the end of 2013. The multiple started in the high teens in the early 1960s, a period when the cost of equity was low. It then had a steady march downward as both interest rates and the equity risk premium rose, bottoming at just over 5 times in 1981. Consistent with bull markets in both bonds and stocks, the steady-state price-earnings multiple ascended, with a recent peak in the late 1990s. Over the full period, the average multiple was 10.4 times with a standard deviation of 2.7.

Exhibit 1: The Steady-State Price-Earnings Multiple (1961-2013)



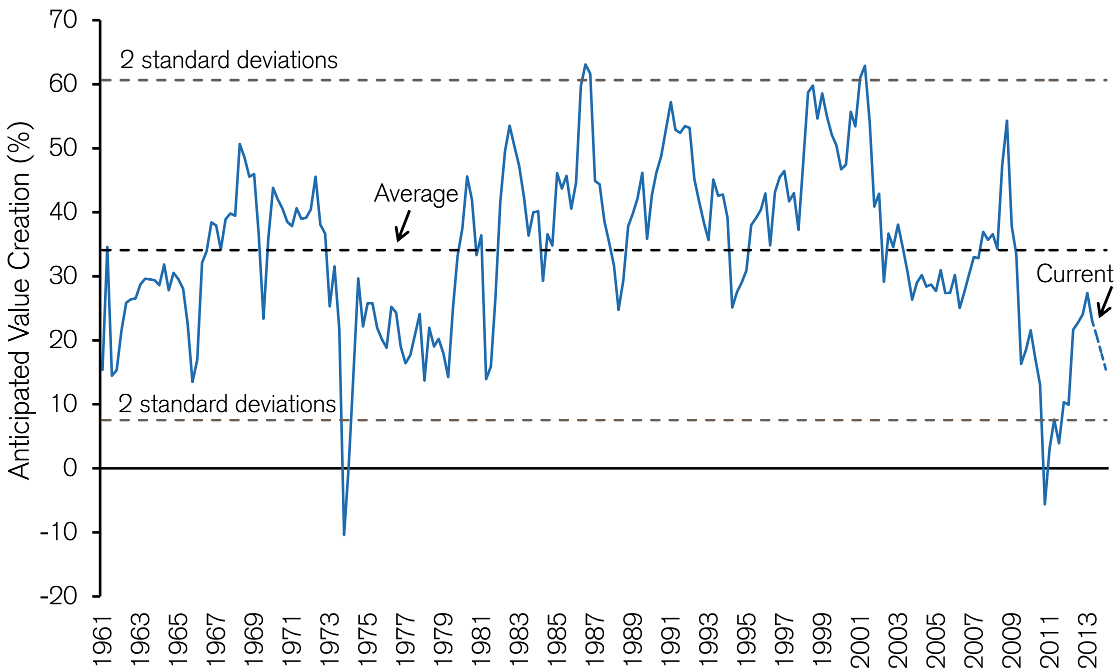
Source: Cost of equity estimates from Aswath Damodaran.

Careful consideration of Exhibit 1 can help frame discussions about the appropriate price-earnings multiple, both on an absolute basis and relative to history. Price-earnings multiples are a product of a multitude of factors, including interest rates, inflation expectations, the equity risk premium (itself influenced by sentiment), the business cycle, tax rates, the quality of earnings, growth prospects, and investment opportunities. To the degree to which those factors change over time, it stands to reason that the appropriate multiple will change as well. For this reason, appeals to history should be approached with caution.

Since 1961, the steady-state value has explained about two-thirds of the market's value, on average, and anticipated value creation has explained the other third (see Exhibit 2). We calculate this by taking the sum of the operating net income for the S&P 500 over the last four quarters, capitalizing it by the cost of equity, and subtracting the result from the S&P 500 price level.

For example, the four quarters of earnings ended September 30, 2013 were $102.20 and the cost of equity was 8 percent, generating a steady-state value of 1,277.50 for the S&P 500. The index closed at 1,681.55. This means that the steady state was 74 percent of the value and that anticipated value creation was the other 24 percent.

Exhibit 2: Percentage of S&P 500 Attributable to Anticipated Value Creation (1961-2013)



Source: Standard & Poor's, Aswath Damodaran, Credit Suisse.
Note: Data as of January 20, 2014.

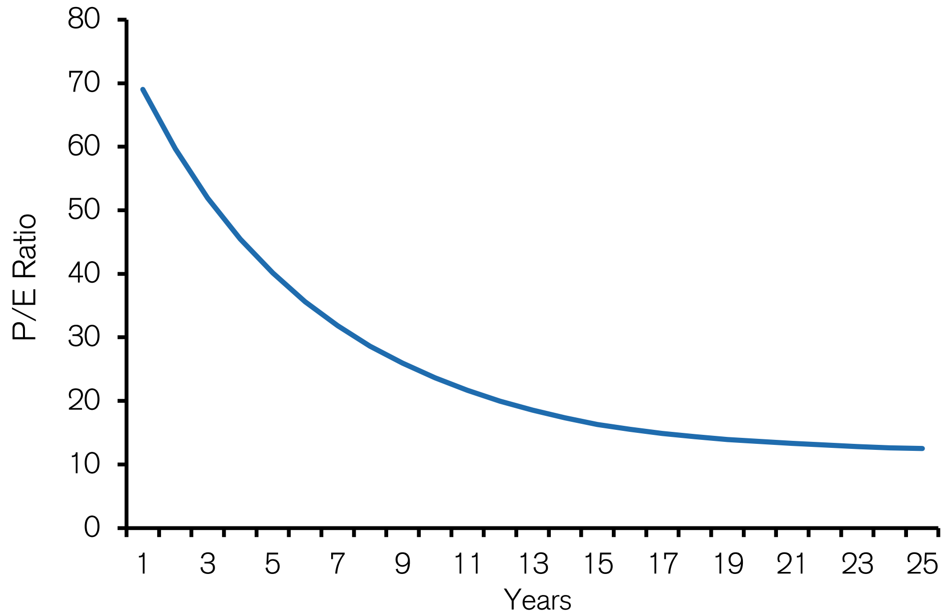
As the exhibit shows clearly, the ratio of anticipated value creation to total value has swung substantially over the years. In the bear market of 1973 and in the recovery market in 2011, the anticipated value creation was negative. The ratio spiked around the time of the 1987 crash, the dot.com bubble in 2000, and during the Great Recession in 2008-2009. Based on the consensus of estimates for 2014 earnings, the ratio is now in the range of 15-20 percent.

These measures are for the market. What about an individual company? Bruce Greenwald, a professor of finance and economics at Columbia Business School, discusses a hypothetical company that makes toasters that he calls, appropriately, Top Toaster. He suggests that Top Toaster's early successes dissipate as competition comes along and drives down returns on incremental capital to the cost of capital. At that point, Top Toaster will trade at its steady-state price-earnings multiple. It produces a commodity product and earns its cost of capital. Greenwald suggests that this is the plight of most companies. Cementing the idea in his inimitable style, he says, "In the long run, everything is a toaster."[10]

To the degree that Greenwald is correct, companies that end up earning their cost of capital trade at the steady-state price-earnings multiple. If competitive forces are strongly at play, a company's price-earnings multiple will migrate toward the steady state. Factors that determine the rate of this migration include barriers to entry in the industry, the ferocity of competition, and the rate of technological change. Management's job is to mitigate these factors.

Exhibit 3 provides a very simple example of the march toward a steady-state price-earnings multiple. This company starts with a return on invested capital of 56 percent and a growth rate of 25 percent. Justifiably, the stock's price-earnings multiple is a very high 70 times. We then fade the returns on capital from 56 percent to 8 percent, the assumed cost of capital, and slow the growth rate from the mid-20s to 5 percent over the subsequent 25 years. The warranted price-earnings multiple glides down from around 70 times to 12.5 times. This is the commodity multiple.

Exhibit 3: The March toward a Commodity Multiple

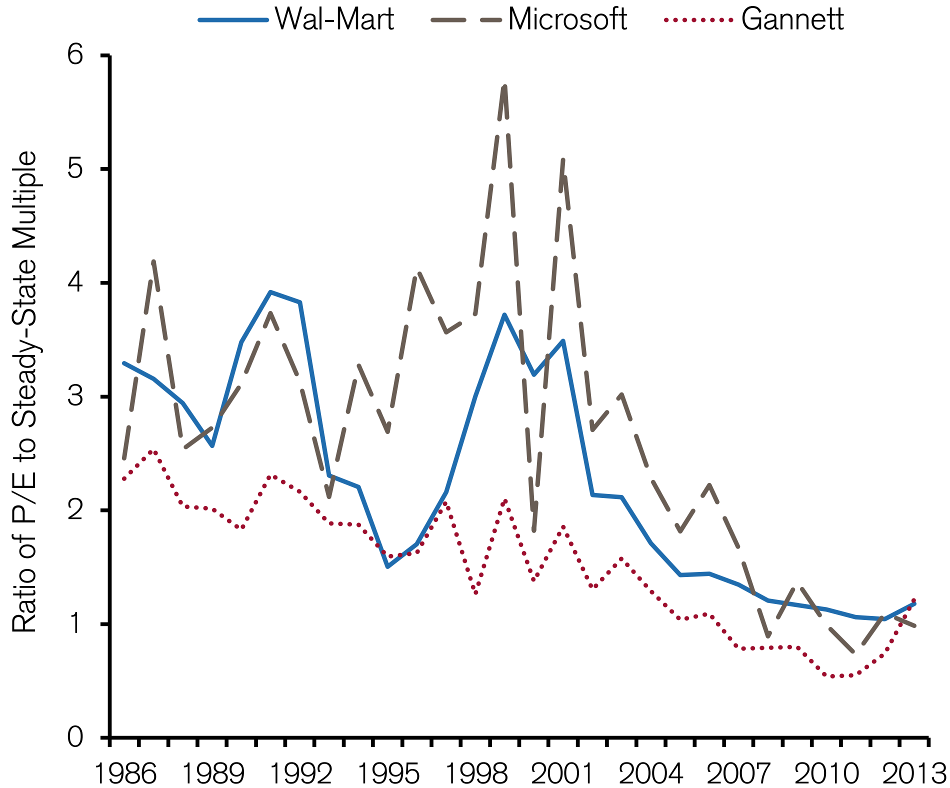


Source: Credit Suisse.

Analysts who argue that the price-earnings multiple of a company that was prosperous in the past should revert to a previous level must be particularly mindful of this pattern. Unless a company's prospects for growth and return on incremental capital are consistent with prior levels, a condition that is generally very difficult to meet as a company grows, then there is no reason to believe that the price-earnings multiple will match historical levels. Multiples may rise if the cost of capital falls, but that value driver affects all stocks in a similar fashion.

Exhibit 4 provides three examples of the pattern in Exhibit 3 using Wal-Mart, Microsoft, and Gannett. For each company, a line traces the ratio of its price-earnings multiple to the steady-state multiple from Exhibit 1 from 1986 through 2013. A high number suggests that the market is pricing in substantial future value creation, and a ratio of 1.0 means the company is being valued at a commodity multiple. In all three cases, the ratios have descended toward one over the past quarter century.

Exhibit 4: Ratio of P/E to Steady-State Multiple for Wal-Mart, Microsoft, and Gannett



Source: Standard & Poor's, Aswath Damodaran, Credit Suisse.

We can't assume that all companies can sustain their current levels of net operating profit after tax.[11] For example, companies that make desktop personal computers, print books, or publish newspapers are facing secular challenges. In these cases, we can modify the steady-state value with a variation of the Gordon growth model:[12]

$$\text{Modified steady-state value} = \frac{\text{Net operating profit after tax (1 + growth)}}{\text{Cost of capital - growth}}$$

Take as an example a company that has $100 in NOPAT and a 10 percent cost of capital. The steady-state value is $1,000 ($100/.10). Let's now assume that the company's profit will decline 10 percent per year in perpetuity. Note that we are adding a negative value for growth in the numerator, which has the effect of reducing the NOPAT. We are also subtracting a negative in the denominator, which has the effect of increasing the discount rate. We calculate the value as follows:

$$\text{Modified steady-state value} = \frac{\$100\ (1 + -.10)}{.10 - -.10} = \frac{\$100(.90)}{0.20} = \frac{\$90}{0.20} = \$450$$

Were this decline accurate and the market to price it properly, the steady-state price-earnings multiple would be 4.5 times ($450/$100). So businesses with very bright outlooks for value creation can still have justifiably low multiples if the current level and sources of earnings are unsustainable.

Component II: Value Growth Opportunities

Assuming the current level of earnings is sustainable, we can attribute about one-fifth of the value of today's stock market to future value creation. The M&M formula tells us that there are three key drivers of value creation:

- The spread between the return on incremental invested capital and the cost of capital.
- The magnitude of the investment.
- How long a company can find investments at a positive spread.

The combination of the first two drivers dictates the rate of growth. To show this relationship, we first need to define return on incremental invested capital, or ROIIC.

$$\text{ROIIC} = \frac{\text{NOPAT}_1 - \text{NOPAT}_0}{\text{Investment}_0}$$

In plain words, this says that ROIIC equals the increase in NOPAT this year divided by the investment the company made last year. NOPAT equals the cash earnings of the business assuming no financial leverage, and investments include changes in net working capital, capital expenditures net of depreciation, and acquisitions.[13] There's a very important simplifying assumption that says that all of the increase in NOPAT is attributable to last year's investment.[14]

Let's examine an example to make this more tangible. Say a company invests $50 in a particular year and sees its NOPAT grow by $10 in the subsequent year. ROIIC would equal 20 percent ($10/$50). What if the company invested $100 to get the same lift in NOPAT? ROIIC would decline to 10 percent ($10/$100). So ROIIC is a measure of how efficiently a company grows.

When companies and investors think about valuation, they commonly start with growth. But an understanding of the first two drivers of value shows why this focus is wrong. If a company is expected to have an ROIIC exactly equal to the cost of capital, the second term of the equation collapses to zero and the price-earnings multiple goes to the steady-state level. If ROIIC is above the cost of capital, the second term is positive, and growth will enhance value. Finally, if ROIIC is less than the cost of capital, growth destroys shareholder value. More rapid growth leads to greater value destruction.

So whether growth is virtuous depends on the firm's incremental economic returns. A company can grow its earnings per share without creating shareholder value.[15] In our view, proper thinking about valuation requires dwelling first on the incremental return on investment and only later considering the impact of growth.

Exhibit 5 shows the trade-off between returns and growth. Across the top are various assumptions about ROIIC. Down the side are a range of NOPAT growth rates. In the body are the price-earnings multiples that fall out of the relationships. The model generating these multiples assumes that the company is financed solely with equity, has a cost of capital of 8 percent, and that the company can find investments at the implied return for 15 years. More realistic assumptions do not change the core lessons from the exhibit.[16]

Exhibit 5: P/Es Given Different Scenarios for ROIC and Growth

	Return on Invested Capital			
Earnings Growth	4%	8%	16%	24%
4%	7.1x	12.5x	15.2x	16.1x
6%	3.3	12.5	17.1	18.6
8%	NM	12.5	19.4	21.8
10%	NM	12.5	22.4	25.7

Source: Credit Suisse.
Note: Assumes all equity financed; 8% cost of capital; 15-year forecast period.

There are three fundamental concepts that you can take away from the exhibit. First, a company earning its cost of capital will trade at the commodity price-earnings multiple, 12.5 times in this case, irrespective of growth. You can imagine these companies as being on an economic treadmill: You can speed up or slow down the treadmill of growth and it makes no difference, the companies are not going anywhere. Value neutral companies must first figure out how to increase ROIIC before they worry about growth.

Second, if a company is generating returns in excess of the cost of capital, growth is good. Indeed, all things being equal, faster growth translates directly into a higher price-earnings multiple. For instance, the warranted price-earnings multiple for a company with a 24 percent ROIIC and 4 percent growth is 16.1 times, whereas a company with the same ROIIC but a more rapid growth rate of 10 percent is worth 25.7 times. The value of high ROIIC companies is extremely sensitive to changes in perceived rates of growth.

Finally, companies that earn below the cost of capital on their incremental investments destroy shareholder value. We can see this clearly in cases when companies overpay for acquisitions and hence transfer wealth to the selling company. Acquisitions are a good example because the acquiring company grows, and in many cases the deal is accretive to earnings per share. That many deals grow the business and earnings yet destroy value is a stark reminder that an acceptable return on incremental investment is paramount.

Academic research shows that the stocks of those companies that grow their assets the most rapidly, a proxy for substantial investment, tend to generate lower returns for shareholders.[17] In theory, companies can rank their investment opportunities in relative attractiveness. The idea is that those companies that invest the most deplete the value creating investment opportunities and dip into investments that are value neutral or value destroying.

The final component of future value creation is how long a company can find attractive investment opportunities. M&M referred to this as simply “T,” but it is also known as “value growth duration,” “competitive advantage period,” and “fade.”[18] This period is closely related to sustainable competitive advantage. Some companies are able to find attractive investment opportunities over a long time by virtue of the industry in which they compete, the strategies they select, the capital allocation choices they make, and some luck.[19]

The period of attractive investment opportunities has attracted considerable research attention. There are a few things we can say to summarize the work. First, the market tends to impound value creation for many years in the future. It is common for the market to reflect a half dozen years or more of value-creating investment opportunities in the price of a stock. This empirical reality counters the notion that the market is strictly short-term oriented.

Second, the anticipated period of value creating investment opportunities is different for various industries. For instance, research by Brett Olsen, a professor of finance, suggests that the market-implied competitive advantage period averaged about 8 years from 1976-2007, with a span of roughly 5 years for very competitive industries to 15 years for industries that are more stable.[20]

This range of market-implied competitive advantage periods is tied closely to the reversion to the mean of returns on invested capital. That reversion occurs is incontrovertible, but we also know that the rate of reversion to the mean varies by industry, which explains the range that we see in years of anticipated value creation. This says that industries with rapid reversion to the mean justifiably deserve lower price-earnings multiples, as the second term of the equation will be worth less, all things equal, than that of an industry with a slow rate of reversion to the mean. Slow fade sectors include consumer staples and health care, and fast fade sectors include information technology and energy.[21]

Recognizing the persistence of high returns and attractive investment opportunities for some companies within its database, Credit Suisse HOLT® developed criteria for "eCAP" companies. These companies are expected to find attractive investment opportunities for a longer period than the general population of companies can. The criteria for being an eCAP company, which the HOLT team derived empirically, include a sufficiently high initial CFROI, slow fade, low CFROI volatility, and asset growth that remains in check.[22]

A thoughtful assessment of future value creation must balance a sense of ROIIC, growth, and the longevity of investment opportunities. All of these essential drivers are implicit in a price-earnings multiple but must be explicit in a model based on discounted cash flow. Analysts frequently appeal to past multiples or comparable multiples to make a case for valuation even as the outlook for one or more of these drivers has changed.

Use of Relative and Comparable Multiple Valuation

A great deal of valuation in the financial community is based on relative or comparable multiples. Specifically, it is also common to compare the valuation of one company to a perceived group of peers to judge whether the stock is under- or overvalued. Analysts also frequently compare the current valuation of a company or an industry to its past valuation to argue that it's cheap or dear.

At this point, the peril of comparable valuation based on multiples should be clear. Unless the value drivers of the peer companies are very similar to those of the subject company, comparable valuations are baseless. More often than not, disparities in price-earnings multiples are justified given the difference in economic characteristics of the companies in question. Industry classifications do not always accurately capture companies of similar economic profiles.

Market forecasters are fond of comparing today's price-earnings multiple to multiples of the past to judge the prospects of the market. For historical multiples to be relevant to the present, today's underlying drivers of value and valuation must be consistent with those of the past. This occurs only when the statistical properties of the drivers of stock price returns are stable over time. The fancy term for this stability is "stationarity." These drivers include interest rates, inflation expectations, tax rates, the equity risk premium, and the composition of the companies within the market. Accounting standards must also be consistent so that earnings represent the same quantity over time.

In fact, each of these drivers has seen a great deal of change over time. Let's dwell on the equity risk premium for a moment. A survey of 150 corporate finance and valuation textbooks found that they recommended a range of equity risk premiums from 3 to 10 percent, and one-third of the books used different premiums within their own pages.[23] Bradford Cornell, a professor of finance, looked at the equity risk premium over time and concluded that it "is *probably* nonstationary." He adds, tellingly, "Recognition that the risk premium may be nonstationary provides a warning signal regarding the projection of past averages into the future."[24]

All of this suggests that you should use relative and comparable multiples with a great deal of caution. What you want to compare are the valuations given similar underlying economic drivers. This is true whether comparing the stock of one company to a peer group or comparing valuations over time. At the end of the day, price-earnings multiples are likely too blunt an instrument to do the job effectively.

One approach based on a multiple that has received considerable interest in recent years is the cyclically adjusted price-earnings (CAPE) model developed by two professors of economics, John Campbell and Robert Shiller.[25] The basic argument is that the long-term expected return for the stock market slumps below average when the ratio of stock prices to long-term trailing earnings is high. Conversely, long-term expected returns are above-average when the ratio is low. We discuss the CAPE model in Appendix C. In recent years, its explanatory power has been limited.

Multiples and Expectations

The key to making money in markets is to distinguish between expectations and fundamentals. The expectations in a stock reflect a company's anticipated financial results. This is the stock price. Fundamentals are the future financial performance of the business, including future return on incremental invested capital, growth, and sustainable competitive advantage. That is value. When price and value get out of line, there is opportunity.

The expectations investing process has three steps.[26] The first is to understand what expectations are reflected in today's stock price. We can use a metaphor of a high jumper's likely success, where the level of the bar represents the expectations in the stock, and how high the jumper can leap reflects the company's fundamental results. Step one tells us simply where the bar is set.

The second step is to determine the company's likely financial performance. This requires strategic and financial analysis. Strong financial results are consistent with a lofty jump and poor results with an inability to take off.

The final step flows from the first two. It is to make buy, sell, or hold decisions based on the difference between expectations and fundamentals. We want to know if the company will outperform expectations and, if so, whether there is a margin of safety.

All things being equal, low multiples indicate low expectations. Academics tend to prefer multiples of book value because of their higher relative stability, but the core idea is the same. Indeed, there is strong evidence to suggest that value investing, the purchase of a diversified portfolio of stocks that embed low expectations, works well over time.[27] Using the framework that this report developed, low multiple stocks generally have very modest expectations about future value creation. Provided the base business is stable and the company can generate some value, the stock of a company with low expectations can deliver very attractive returns.

In practice, most analysts have only a vague idea of what expectations a particular price-earnings multiple captures. Exhibit 6 shows three companies that all justifiably trade at a 15.0 times price-earnings multiple. In each case, the steady-state multiple is 12.5 times and the other 2.5 points come from future value creation. This example holds constant factors such as leverage and the period the company can find attractive investment opportunities, which further complicates the task of understanding expectations.

In the top row is a company with high growth in earnings (12 percent) but generating only a modest positive spread (0.8 percentage points) to its cost of capital. The bottom row is projected to grow slowly (3 percent) but with a very large positive return spread (15 percentage points). The company in the middle has a growth rate (6 percent) and a return spread (3 percentage points) that splits the anticipated results of the other companies. So a 15.0 price-earnings multiple can imply very different levels of corporate performance, a fact that the simplicity of the multiple obscures.

Exhibit 6: Three Paths to a 15.0 Times Price-Earnings Ratio

	NOPAT growth	ROIIC	
High growth, low spread	12.0%	8.8%	
Moderate growth, moderate spread	6.0%	11.0%	15.0x
Low growth, high spread	3.0%	23.0%	

Source: Credit Suisse.
Note: Assumes all equity financed; 8% cost of capital; 15-year forecast period.

Summary

Here are some conclusions from this discussion:

- *Multiples are not valuation; they are shorthand for the process of valuation.* The value of a financial asset is the present value of future cash flows. Accordingly, it is essential to understand the components of a multiple and to have a sense of what those components imply about a company's future financial performance.

- *In assessing capital allocation, consider incremental returns on capital first and growth second.* Growth only creates value if the investments generate a return in excess of the cost of capital. Note that this return need not be immediate. But no company should pursue growth solely for the sake of growth, and the research shows that rapid asset growth is correlated with weak shareholder returns.

- *Compare companies based on their business models, not their line of business.* For companies to be truly comparable, they must have similar outlooks for incremental returns, growth, and investment opportunities. They must also be financed in a similar fashion for a price-earnings multiple to be useful.

- *Be very careful using the past to understand the future.* Past multiples are only relevant to the degree to which the underlying drivers of value are consistent through time. In fact, many of these drivers have changed, greatly diminishing the utility of past averages.

- *This discussion applies to all multiples.* While we limited our comments to price-earnings multiples, the basic concepts apply to any multiple. The most commonly used multiples after price-earnings are enterprise value-EBITDA (EBITDA stands for earnings before interest, taxes, depreciation, and amortization) and price-to-book value.

- *Be mindful of the quality of earnings.* We delved into our discussion using techniques and definitions (e.g., net operating profit after tax, investments, and cost of capital) that come from a discounted cash flow (DCF) model. The goal of a good DCF model is to avoid accounting vagaries and to zero in on the cash flow. Earnings fail to do this, and managements have a great deal of discretion in determining the earnings they report. As Alfred Rappaport's quotation at the beginning of this report reminds us, "cash is a fact, profit is an opinion."

Endnotes

[1] Alfred Rappaport, *Creating Shareholder Value: A Guide for Managers and Investors, Revised and Updated* (New York: Free Press, 1997), 15.
[2] Parts of this report are based on Michael J. Mauboussin, "M&M on Valuation," *Mauboussin on Strategy*, January 14, 2005.
[3] Stanley Block, "Methods of Valuation: *Myths vs. Reality*," *Journal of Investing*, Vol. 19, No. 4, Winter 2010, 7-14.
[4] Paul Asquith, Michael B. Mikhail, and Andrea S. Au, "Information Content of Equity Analyst Reports," *Journal of Financial Economics*, Vol. 75, No. 2, February 2005, 245-282.
[5] Merton H. Miller and Franco Modigliani, "Dividend Policy, Growth, and the Valuation of Shares," *Journal of Business*, Vol. 34, No. 4, October 1961, 411-433.
[6] Martin Leibowitz, a luminary in the investment business, also breaks down value in this way. He calls the first term "tangible value" and the second term "franchise value." See Martin L. Leibowitz, *Franchise Value: A Modern Approach to Security Analysis* (Hoboken, NJ: John Wiley & Sons, 2004).
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[9] See: http://pages.stern.nyu.edu/~adamodar/. The 8 percent cost of equity estimate is the sum of the 3 percent yield on the 10-year U.S. Treasury note (the risk-free rate) and Damodaran's estimate of the equity risk premium of 5 percent. Both figures are as of January 1, 2014.
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[12] Myron J. Gordon, *The Investment, Financing, and Valuation of the Corporation* (Homewood, IL: Richard D. Irwin, Inc., 1962), 43-46.
[13] There are other methods to forecast investment needs. One of the best-known is the "value driver" model developed by Al Rappaport. See Rappaport, 33-36, or Rappaport and Mauboussin, 21-28.
[14] This assumption can be reasonable for companies with stable investment patterns. In cases where investments are lumpy, it is more effective to use rolling averages of NOPAT changes and investments.
[15] Rappaport and Mauboussin, 15-16.
[16] For our examples we have assumed no financial leverage. But the introduction of debt influences the price-earnings ratio as well. Specifically, when the unlevered price-earnings multiple (firm value/NOPAT) is less than 1/cost of debt, the price-earnings multiple falls as leverage rises. When the unlevered price-earnings multiple is greater than 1/cost of debt, the price-earnings multiple rises with leverage. For a detailed proof of this relationship, see Tim Koller, Marc Goedhart, and David Wessels, *Valuation: Measuring and Managing the Value of Companies, Fifth Edition* (Hoboken, NJ: John Wiley & Sons, 2010), 787-790.
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Appendix A: Equivalence of Unlevered and Levered Free Cash Flow Valuation Models

The value of equity should be the same whether you use an unlevered or a levered free cash flow model. In reality, it can be difficult to get the two to match. But here's a simple example of the equivalence that works under certain assumptions. This discussion is based on an analysis by Aswath Damodaran, a professor of finance at New York University's Stern School of Business.[28]

Assume that a firm has a market value of $1,000, made up of $750 in equity and $250 in debt. Assume earnings before interest and taxes (EBIT) of $107.7, a cost of equity of 8 percent, a pretax cost of debt of 6.15 percent, and a tax rate of 35 percent.

First, we can calculate the weighted average cost of capital (WACC) as follows:

$$\text{WACC} = .08\left(\frac{750}{1{,}000}\right) + .0615\left(1 - 0.35\right)\left(\frac{250}{1{,}000}\right) = 7\%$$

Now, we can calculate the value of the firm:

$$\text{Value of the firm} = \frac{\text{EBIT (1 – tax rate)}}{\text{WACC}} = \frac{107.7(0.65)}{.07} = \frac{70}{.07} = \$1{,}000$$

Naturally, the value of the equity is simply the firm value less debt, or $750 ($1000 - $250 = $750).

Now we calculate the value of the equity directly. Instead of capitalizing after-tax EBIT by the cost of capital, we now capitalize net income by the cost of equity. The differences between unlevered and levered approaches include the treatment of financing costs and the tax shield. We assume that financing costs equal debt times the pretax cost of debt.

$$\text{Net income} = (\text{EBIT} - \text{financing costs})\ (1 - \text{tax rate}) = (107.7 - 15.4)(0.65) = (92.3)(0.65) = \$60$$

We can now calculate the value of the equity by capitalizing net income by the cost of equity:

$$\text{Value of equity} = \frac{\$60}{.08} = \$750$$

Naturally, this is a very simple example based on a perpetuity assumption. But you can expand on the basic logic for each year, extending the model into the future.

At the outset, we said this equivalence only works under certain assumptions. The first is that the sums for debt and equity that we used to calculate the capitalization are the same as the product of the valuation. The second is an absence of nonoperating items that would affect net income but not EBIT. The third is that financing costs equal the pretax cost of debt times debt outstanding.

Appendix B: Estimating the Cost of Equity

According to standard finance theory, you can estimate the cost of equity using the capital asset pricing model. This model starts with a risk-free rate and adds an equity risk premium (ERP), a boost to returns in order to compensate for higher risk.

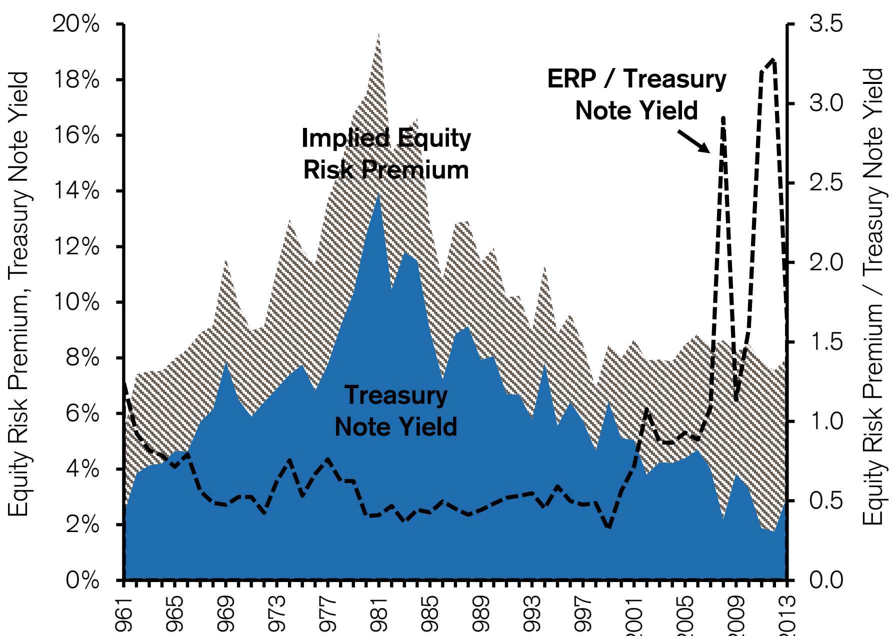
In estimating the cost of equity, the devil is in the details. You must decide on an appropriate risk-free rate and the means by which you will estimate the equity risk premium. For a detailed discussion of these issues, see our report entitled "Estimating the Cost of Capital" (October 8, 2013).

When considering the equity risk premium, you need not fly blind. There are a handful of market-based indicators that provide insight into the market's risk appetite. These include bond spreads, credit default swaps, and measures of volatility.

Aswath Damodaran uses a forward-looking model to estimate the equity risk premium. The idea is that he knows the price level of the market and can make sensible estimates of normalized growth in the future. He can then impute the equity risk premium by calculating the discount rate that equates the present value of future cash flows with the prevailing index price.

Exhibit 7 shows Damodaran's estimate of the cost of equity, as well as its relevant components, over the past 50 years. The Treasury note yield, the proxy for the risk-free rate, is at the bottom in solid blue, and the implied ERP is on top in striped brown. The sum of the note yield and ERP is the cost of equity, or the expected return for the market. After peaking in the early 1980s, the bull market of the 1980s and 1990s drove down the implied return for the stock market. This explains the varying levels of the steady-state price-earnings multiple in Exhibit 1.

Exhibit 7: Historical Implied Equity Risk Premium per Aswath Damodaran, 1961-2013



Source: Aswath Damodaran and Credit Suisse.

The exhibit shows something even more remarkable: The ratio between the equity risk premium and the risk-free rate. That ratio has averaged 0.8 over the past five decades (roughly an average ERP of 4 percent and risk-free rate of 5 percent). But the extraordinarily loose monetary policy adopted by central banks around the world following the financial crisis pushed interest rates below the level that many consider normal. Yet equity returns, which have averaged 6-7 percent over time adjusted for inflation, have remained in a range consistent with historical averages.[29]

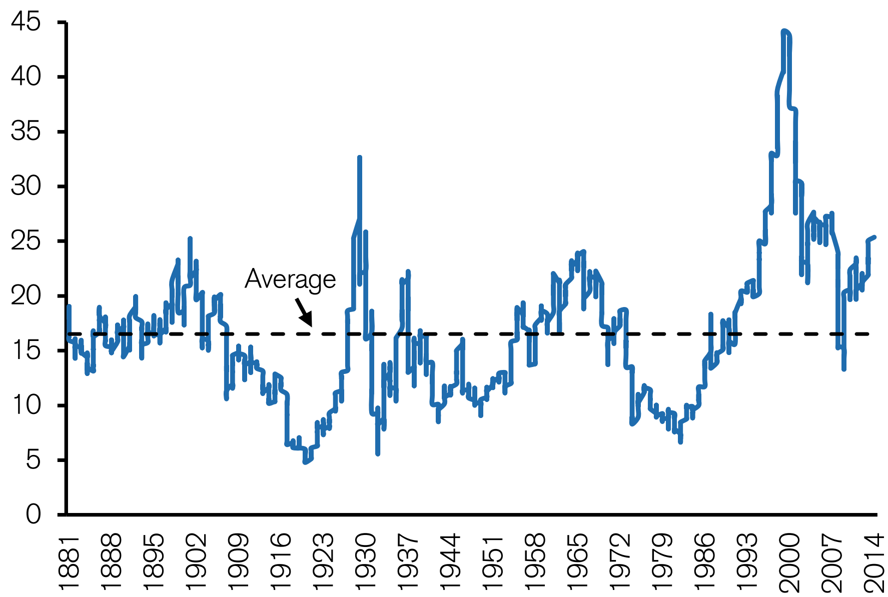
As a consequence, the ratio of ERP to risk-free rate jumped from below 1.0 in the early 2000s to more than 3.0 in 2011 before settling down to about 1.7 today. While the expected return from the market hasn't changed much, the composition relies much more on the equity risk premium and much less on the risk-free rate than in the past. Whether we will see a ratio in the future that is closer to the historical average remains a subject of debate.

Appendix C: Cyclically Adjusted Price-Earnings (CAPE) Ratio

One valuation approach that has garnered interest is the cyclically adjusted price-earnings (CAPE) ratio, also known as the Shiller P/E, the Campbell-Shiller PE (10) Ratio, or the Shiller (10) Ratio. Some market forecasters point to the CAPE ratio as evidence of an overvalued market, while others dismiss the metric as fundamentally flawed and too pessimistic.

John Campbell and Robert Shiller, two economists, developed the foundation for the CAPE ratio in a series of papers.[30] Investors commonly interpret the CAPE to be the ratio of price divided by a ten-year average of reported earnings per share, both adjusted for inflation. To illustrate, in early January 2014 the CAPE for the S&P 500 was 25.4, with the index at 1828.7 and earnings of $72.11 (1828.7/$72.11 = 25.4). Exhibit 8 shows the CAPE ratio since 1881. The average over the whole period is 16.5.

Exhibit 8: Cyclically Adjusted Price-Earnings Ratio, January 1881-January 2014



Source: Robert Shiller's home page, see: http://aida.wss.yale.edu/~shiller/data.htm.

Campbell and Shiller use ten years of reported earnings because noise and the business cycle heavily influence short-term earnings. This sidesteps a great deal of the randomness in conventional price-earnings ratios, which are typically based on one year. The professors also suggest that they were inspired by the pioneers of security analysis, Benjamin Graham and David Dodd, who wrote that one should measure valuation ratios over a period "not less than five years, and preferably seven to ten years."[31]

The finance professors argue that the CAPE ratio has strong predictive value. In their original paper, they calculated the CAPE ratio using the S&P 500 Index (or a suitable proxy in the early years) from 1871 to 1987. They did a regression analysis with the CAPE ratio as the independent variable and the subsequent ten-year real returns on stocks as the dependent variable and found a coefficient of determination, or r-squared, of 40 percent. The slope of the regression was negative, which means that a high CAPE ratio suggests lower stock returns over the next ten years and a low ratio implies the converse.

In recent years, though, implementation of a strategy using the CAPE ratio would have been a challenge. In the 20 years ended 2013, the CAPE ratio was above its long-term average, suggesting caution, for 231 of

240 months. At the same time, the total shareholder returns for the S&P 500 were 11.1 percent (arithmetic) and 9.2 percent (geometric), very consistent with total shareholder returns since 1928.

As a result, the CAPE ratio has its critics. Some take issue with the fact that CAPE averages earnings over ten years, a period longer than the typical business cycle. Critics also complain that CAPE uses a measure of inflation that has changed over time, making historical comparisons a challenge. The most heated controversy surrounds how much faith to put in today's high CAPE in the wake of a deep recession that left companies with massive reported losses.[32]

Jeremy Siegel, a professor at the Wharton School of the University of Pennsylvania, has been the most visible of the group who call for caution in using the CAPE ratio. While Siegel supports the idea of smoothing earnings, he maintains that the CAPE model currently understates future stock market returns.[33]

Siegel argues that accounting changes have depressed the reported earnings of the S&P 500 by requiring large asset write-downs while not allowing for commensurate allowances when assets rise in value. The Financial Accounting Standards Board issued these rules for mark-to-market accounting in 2001. These accounting changes dropped reported earnings and exaggerated the price-earnings multiple of the index. This change makes recent readings inconsistent with the historical series.

To mitigate this bias, Siegel recommends using operating earnings instead of reported earnings in the CAPE model. For example, he shows that operating earnings improve the CAPE's explanatory power. He further finds that using real, after-tax corporate profits from the National Income and Product Accounts (NIPA) makes the model even more effective and eliminates the gross overvaluation that the ratio has suggested in recent years. He concludes that the CAPE ratio is a powerful predictor of real price returns that researchers can improve by using NIPA profits instead of either operating or reported earnings.

As a practical matter, the CAPE ratio can be a means to approximate expectations and hence gain a sense of future market returns. Siegel's recommendation to use NIPA data also appears sensible as it irons out some of the vagaries associated with the accounting changes. In reality, few investors think as far back, and as far forward, as the CAPE ratio demands. Price-earnings multiples based on next year's earnings remain the most popular shorthand for valuation, and the correlation between this year's price-earnings multiple and the returns for the market in the subsequent 12-24 months is effectively zero.[34]

Important information

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