



ASSESSING THE VALUE OF VALUATIONS

What Do Today's Stock Prices Imply for Future Returns?

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EXECUTIVE SUMMARY



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As the bull market approaches its seventh anniversary next March, investors are increasingly nervous. Partly, this anxiety stems from a deterioration in the fundamentals: The global economy has decelerated on the back of a slowdown in China and outright contractions in other large emerging markets. But years of unconventional monetary policy have also pushed valuations to heightened levels. The bull's retort is that equity market valuations are justified given low rates.

In addressing the valuation question, a traditional measure, the Equity Risk Premium (ERP), provides a theoretically attractive framework. The ERP, or the excess return of stocks over Treasuries, allows for a contextual view of valuations based on what is arguably the most important consideration: the discount rate. It has long been an important tool for investors as a way to determine asset allocations. Unfortunately, while the framework is intellectually satisfying, its predictive power about future returns is somewhat limited. At one-year horizons, the ERP tells you little about future returns. While the predictive power does improve at longer time horizons, the ERP is of only modest use in forecasting U.S. equity returns.



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Interestingly, a more basic measure of value may be more informative. A simple price-to-earnings ratio, whether based on a snapshot in time or a smoothed measure of earnings, has relevance for the distribution of future equity returns. As intuition would suggest, below median multiples typically lead to higher average returns, while above median multiples have historically been associated with periods of below average returns.

However, while earnings multiples are relevant, the relationship between value and future returns is neither linear nor monotonic. While higher valuations were associated with lower future returns, there were numerous instances when particularly high valuations coincided with strong returns over one- and three-year horizons. This phenomenon was most visible in the mid-to-late 1990s. What is apparent is that with higher valuations, when the market does decline the drop is more pronounced.

The takeaway for investors is that while stocks are perfectly capable of turning in a stellar year or so, on a three- to five-year basis investors should expect significantly lower returns than they have become accustomed to over the past six years.

"The buyer is entitled to a bargain. The seller is entitled to a profit. So there is a fine margin in between where the price is right."

—Conrad Hilton

Are stocks still worth buying? The question takes on a heightened sense of urgency given recent developments. Year-to-date, investors have been faced with a year of stalled earnings growth and negative U.S. equity returns. With U.S. stocks trading at a premium to other markets, as well as their historical norm, investors are reasonably concerned as to whether the bull market has run its course.

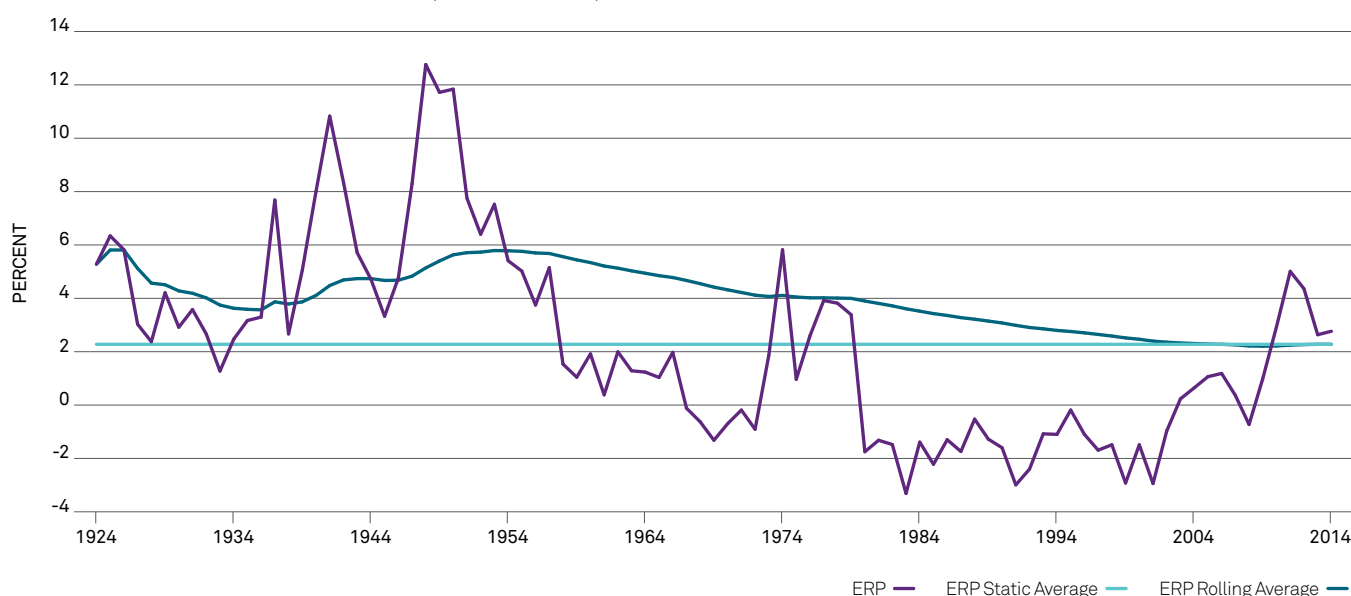
In addressing the issue, many rely on a metric known as the Equity Risk Premium (ERP) as a tool to help us conceptualize the answer. The metric provides a framework for measuring value by comparing the earnings yield available on an equity index with the yield available from bonds. The logic is that equity market valuations are contextual. In other words, the value of stocks needs to be considered in relationship to the major alternative, bonds. Higher valuations look more reasonable in the context of low rates, while seemingly

cheap markets may not be so cheap if interest rates are high. The ERP is measured as the inverse of a stock index's price-to-earnings (P/E) ratio (known as earnings yield) minus a nominal bond yield (see Figure 1).

In theory, the ERP should always be positive as investors should receive an incremental return on stocks to compensate for the increased risk. That said, as Figure 1 illustrates, there have been prolonged periods when the ERP has been stuck in negative territory. Today, however, the premium is not only positive but above the long-term average. The higher premium suggests favoring stocks as any narrowing will support equity returns. There are three ways the ERP can narrow: falling earnings yields (i.e., rising P/E ratio), rising bond yields, or a combination of both.

However, valuations are only useful to the extent they have a linkage with expected future returns. This section of the paper explores to what degree, if any, the ERP provides forward-looking information as to the distribution of future returns.

FIGURE 1: EQUITY RISK PREMIUM (1924 TO 2014)



Source: BlackRock Investment Institute, www.econ.yale.edu/~shiller/data.htm, Author's calculations. ERP of S&P 500 and U.S. 10-year nominal Treasury. Rolling Average computes a new ERP average for every new year that is introduced into the study. Static Average is the ERP average over the entire period. Analysis conducted from Dec 1924 to Dec 2014.

DIGGING DEEPER

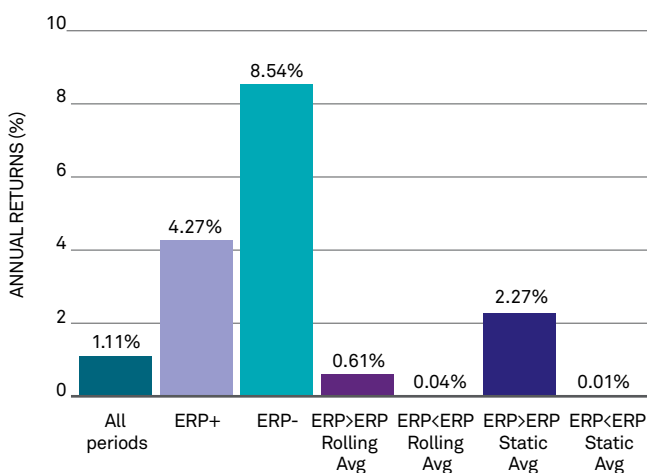
In order to provide a statistically relevant sample, ideally this type of analysis should be conducted over a long time series. Thus, we started our research in 1924 using the S&P 500 over a 90-year period concluding in 2014.

Our first question was to what degree does the ERP under various scenarios predict future equity market returns? Those various scenarios included:

1. If the ERP at an indicated time was positive (equities attractive to bonds) or negative,
2. If the ERP at an indicated time was greater than (equities attractive to bonds relative to history) or less than a rolling average of ERP, and
3. If the ERP at an indicated time was greater than (equities attractive to bonds relative to history) or less than a static average of ERP.

What we found was the ERP has very little explanatory power over one-year returns (see Figure 2).

FIGURE 2: ERP FAILS TO PREDICT ACROSS SHORT HORIZONS

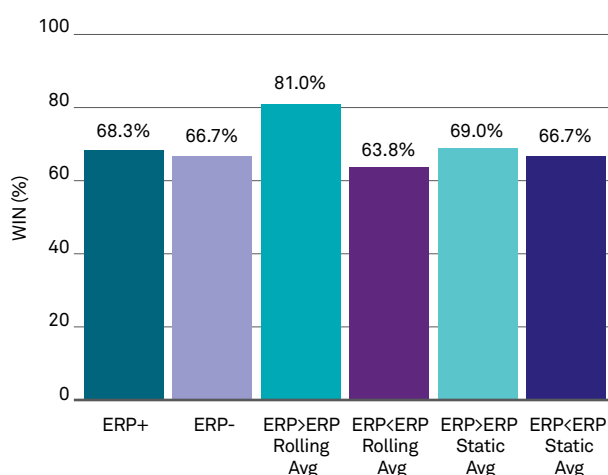


Source: BlackRock Investment Institute, www.econ.yale.edu/~shiller/data.htm, Author's calculations.

Notes: Values are R^2 outputs of regressions analysis. 100% indicates perfect predictability of future returns and 0% indicates no predictability power. Analysis conducted from Dec 1924 to Dec 2014.

In the absence of a straightforward relationship with one-year returns, we explored a different question: Does an ERP under various scenarios tell us anything about the expectations for a positive or negative market over an annual return period? Equally, we were surprised to find that under various scenarios, there was no discernible difference based on the level or position of the ERP. For example, when the ERP was positive, the market's annual return was positive 68.3% of the time (we call this the win ratio shown as Win %). On the flip side, when the ERP was negative, the market's annual return was positive 66.7% of the time (see Figure 3).

FIGURE 3: SEARCHING FOR A DISCERNIBLE DIFFERENCE...

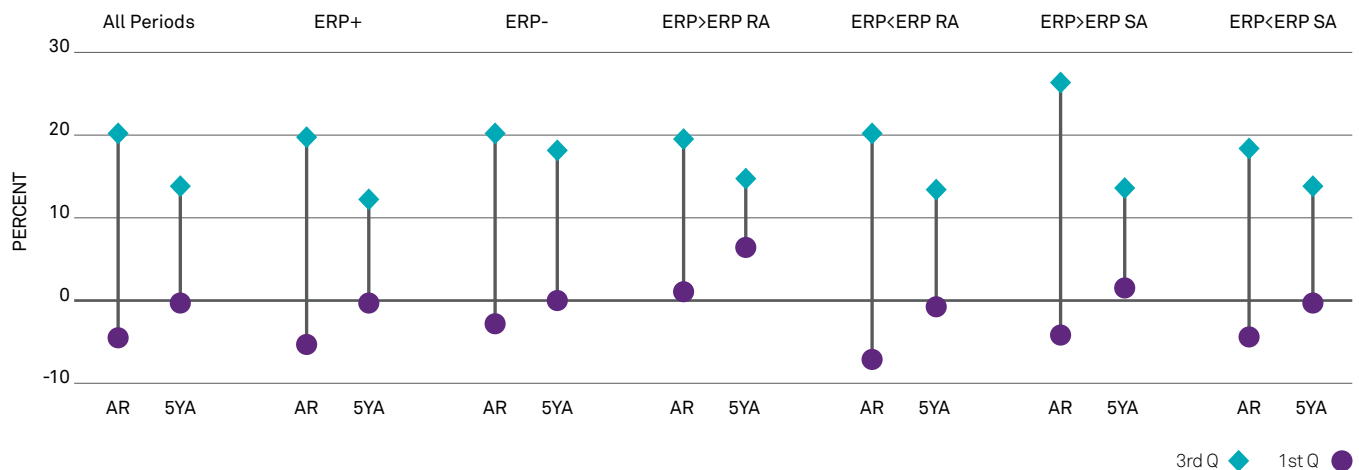


Source: BlackRock Investment Institute, www.econ.yale.edu/~shiller/data.htm, Author's calculations.

Notes: Values are the Win Ratio defined as the percentage of times the defined period was positive under the 6 defined scenarios. For example, when the ERP was positive, the annual return (AR) was positive 68.3% of the time. Analysis conducted from Dec 1924 to Dec 2014.

Finally, we wanted to evolve off the previous study. Win ratio is of limited use as it doesn't indicate the dispersion of the positive returns. So, we calculated quartile returns, which provide more indication of the variation in returns under various scenarios. Similar to the previous two studies, there was no major difference in annual returns. For example, when the ERP was positive (equities attractive to bonds), it had a similar quartile range to when the ERP was negative (equities expensive to bonds) (see Figure 4 under columns AR).

FIGURE 4: QUARTILE RETURNS EQUALLY DO NOT PROVIDE GUIDANCE



Source: BlackRock Investment Institute, www.econ.yale.edu/~shiller/data.htm, Author's calculations.

Notes: Values are the 3rd and 1st quartile returns over the entire analysis period and the 6 defined scenarios. AR = Annual Returns, and 5YA = 5-year return annualized. RA is a rolling average and SA is a static average. Analysis conducted from Dec 1924 to Dec 2014.

SHORT-SIGHTED?

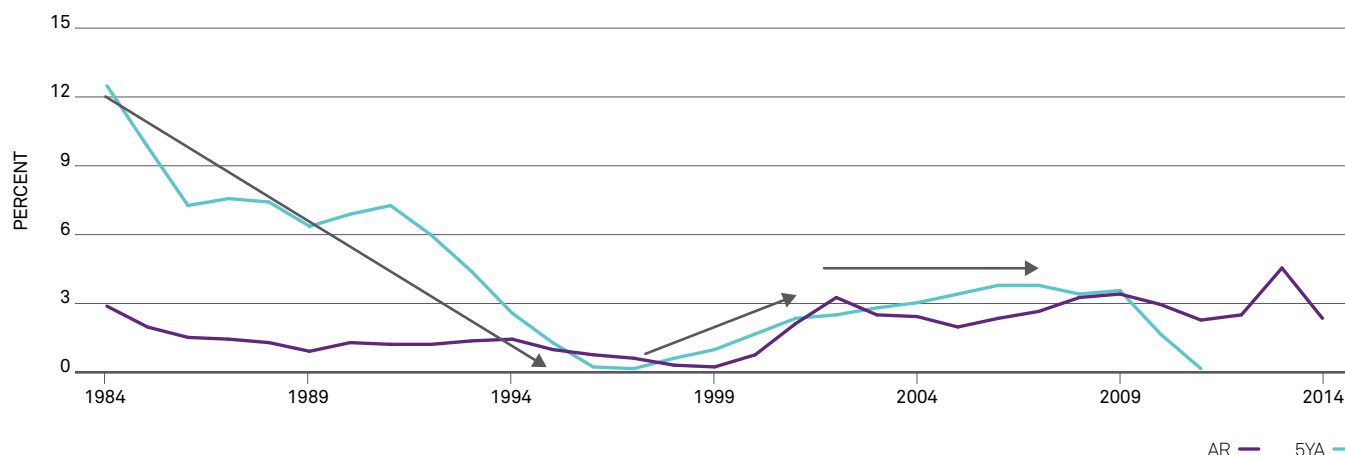
The fact that the ERP had little impact on near-term returns should probably not come as a huge surprise. It is well understood that value is, at best, a mediocre tool for assessing short-term performance. In the near term, which we'll define as periods of a year or less, markets are more likely to be driven by earnings, macroeconomics and sentiment. To that end, we repeated the exercise using a longer-term horizon: five years.

When equities are cheap relative to bonds over a longer return horizon, we found that the ERP explained more of the forward return, but not enough to be highly determinant for an investor. For example, when the ERP was positive, it explained 24.1% of the five-year average annual forward return versus 4.3% when only considering one-year annual returns.

However, over longer horizons, the quartile ranges for all the defined scenarios were tighter. For example, when the ERP was positive, the range was -0.3% to 12.3%, but for the negative ERP, the range was 0.1% to 18.0%. This suggests that at longer horizons, the level of ERP is somewhat relevant for the future distribution of returns, if only at the extremes. Put differently, at longer horizons the ERP takes on a greater relevance in determining the shape of future returns.

FIGURE 5: ERP'S ABILITY TO PREDICT RETURNS HAS DECLINED

Rolling R^2 (60-Year Periods)



Source: BlackRock Investment Institute, www.econ.yale.edu/~shiller/data.htm, Author's calculations. Notes: Values are R^2 outputs of regressions analysis for 60-year rolling periods (ex. 1924-1984). 100% indicates perfect predictability of future returns and 0% indicates no predictability power. For example, in 2011, from a sample 60-year rolling period of returns, we found that the ERP explained 1.6% of 5-year average returns and 3.1% of annual returns. AR = Annual Returns & 5YA = 5-year average returns. Analysis conducted from Dec 1924 to Dec 2014.

One question that does come up quite a bit is whether the value of such signals is being distorted by unconventional monetary policy. Skeptics make a reasonable case that the ERP assumes a market rate for long-term bonds. For much of the past five years, the Fed, rather than a private investor, has been the marginal buyer of long-dated Treasuries. Long-term rates were not determined by market forces but as a matter of policy. As a result, has the signaling power of this approach been compromised by QE and other central bank machinations?

To obtain an answer, we first chose to examine the evolution of the explanatory power of the ERP on forward returns. To do this, we computed a rolling R-squared (a measure of statistical significance) starting in 1924 (see Figure 5).

From the figure, you can see that in the early 1980s, the R^2 started a descent, bottoming out close to 0% in the late 1990s then ticking back up slightly. A possible explanation for this secular decline could be attributed to the start of the 35-year-plus bull market for U.S. interest rates or perhaps the gravity-defying equity bull market of the late 1990s. But to the extent there was another drop-off in explanatory power beginning in 2010, perhaps QE is impacting the efficacy of the ERP.

As another test, we substituted investment grade (IG) bond yields for U.S. Treasury yields. However, this did not alter the results or provide any more conclusive evidence to reject our initial idea. One potential explanation is that investors have had to “reach for yield” given the aforementioned decline in U.S. Treasury rates to capture their desired return. Thus, the yields move together. To expand away from the yield concept, we incorporated the IG bond spread into the analysis to capture a true credit risk premium, but again found no major difference. Our conclusion is that the long-term decline in the efficacy of the ERP may have been exacerbated by the distorting impact of QE, but that effect appears to be dominated by the larger impact of a 35-year bull market in bonds.

A SIMPLER APPROACH

While the ERP does not provide a strong argument for or against equities, other measures may be more instructive. Indeed, one of the more basic measures of value is perhaps the most relevant.

Risk premiums by their nature seek to take into account the relative value versus a fixed income benchmark. However, if what an investor is looking for is an estimate of future absolute returns, traditional valuation metrics may be more relevant.

Looking at several popular metrics, the historical data favor an earnings-based approach. Asset-based ones, such as Tobin's Q, appear to have less significance for future returns. This may reflect the fact that it is increasingly difficult to measure asset values in a world where intellectual property, brand and "asset-light" business models are dominant.

While there are obviously numerous permutations of earnings, we focused our analysis on trailing earnings. Although trailing earnings are an admittedly backward looking measure, we preferred it for a simple reason: The measure has the longest time series allowing for the longest study.

To assess the relevance of price-to-earnings ratios (P/E) based on trailing earnings, we compared P/E ratios divided by quartile to 12-month future price returns (excluding dividends). Historically, the results have followed intuition: Returns have generally been higher when the starting valuation is lower (see Figure 6). Not only have returns been higher, the market has historically been more likely to post positive price returns in years when the starting valuations were at their lowest.

One of the more interesting ways in which valuation seems to impact future returns relates to how markets perform in bad years. When valuations are below the median, "bad years," defined as the lowest quartile of future returns, are about 1%—not great, but not awful. However, when valuations rise above the median, what constitutes a bad year becomes considerably worse. At the most extreme levels, when P/E ratios are above 19, bottom-quartile returns fall to -10%. One way of describing this: When valuations are stretched and the markets have discounted most of the good news, disappointment hits harder.

FIGURE 6: 1-YEAR FORWARD PRICE RETURNS

Quartile	Average	Median	Q1	Q3	Count	Win %
P/E < 13	14.76%	14.76%	1.23%	26.05%	15	80.00%
P/E 13 to 16.7	12.34%	13.41%	1.06%	24.88%	15	80.00%
P/E 16.7 to 18.7	4.10%	9.92%	-1.48%	13.46%	14	71.43%
P/E > 18.7	5.70%	7.77%	-10.56%	20.43%	16	62.50%

Source: Bloomberg 8/31/15.

At longer time frames, the basic relationship still holds: Higher valuations are associated with lower future returns (see Figures 7 and 8). However, the relationship is clearly not monotonic, i.e., it does not progress in one direction. At both three- and five-year horizons, markets appear to do better when they are very expensive relative to periods of just heightened valuations.

This kink in the relationship may reflect the positive returns associated with momentum, or it could simply be a quirk in the data caused by a relatively small number of observations. The fact that three-year returns for fourth-quartile observations are higher than third-quartile observations is largely attributable to the outsized returns of the late '90s bull market.

FIGURE 7: 3-YEAR FORWARD PRICE RETURNS

Quartile	Average	Median	Q1	Q3	Count	Win %
P/E < 13	36.47%	36.47%	21.44%	46.07%	15	80.00%
P/E 13 to 16.7	35.55%	32.55%	24.53%	44.76%	14	78.57%
P/E 16.7 to 18.7	10.05%	5.86%	-4.48%	13.83%	13	69.23%
P/E > 18.7	21.16%	27.73%	2.52%	37.38%	16	62.50%

Source: Bloomberg 8/31/15.

FIGURE 8: 5-YEAR FORWARD PRICE RETURNS

Quartile	Average	Median	Q1	Q3	Count	Win %
P/E < 13	57.14%	57.44%	49.21%	70.00%	15	80.00%
P/E 13 to 16.7	62.99%	61.37%	29.24%	78.89%	12	83.33%
P/E 16.7 to 18.7	20.37%	5.26%	-2.13%	38.44%	13	69.23%
P/E > 18.7	38.82%	29.71%	-9.39%	69.57%	16	62.50%

Source: Bloomberg 8/31/15.

By the end of 1995, markets were already expensive by historical measures. Yet, over the next four years stocks consistently returned more than 20%. As it turned out, stocks, or at least those in the technology sector, were in a bubble, but valuation did not have a negative impact on returns for another four years.

ADJUSTING FOR THE CYCLE

Using the same methodology, we investigated the impact of cyclically adjusted price-to-earnings (CAPE) ratios on future returns. The argument for using a CAPE is that earnings are highly volatile. A simple price-to-earnings ratio is based on a snapshot in time. The problem is that the observation may not be representative of the longer-term trend. Earnings will be depressed at the trough of the economic cycle, making stocks look expensive at exactly the time you want to buy. Conversely, stocks often look cheaper than they really are when the

economy is at a peak. At this point in the cycle, earnings are flattered by unsustainable growth. To add to the problem, margins also tend to mean revert. The argument for using a CAPE is that by using a smoothed measure of earnings, the measure is more stable. The most popular example of this is the Shiller P/E ratio.

Using the Shiller P/E, we performed the same exercise as before. The results were broadly similar to those derived using the more classic definition of P/E. Returns were generally highest when valuations were low and decreased rapidly once valuations climbed above the median (see Figure 9).

However, while there is clearly an association between valuations and returns, once again the relationship is not simple. As was the case with a basic P/E, the highest valuations do not always lead to the lowest returns. While bottom-quartile returns were worst in the case of the most expensive markets, both average and median returns were actually a bit higher

FIGURE 9: 1-YEAR FORWARD PRICE RETURNS USING CAPE

Quartile	Average	Median	Q1	Q3	Count	Win %
CAPE < 11.6	10.54%	11.84%	2.79%	19.90%	34	76.47%
CAPE 11.6 to 16	8.85%	9.37%	-5.99%	26.41%	32	59.38%
CAPE 16 to 20	1.38%	2.24%	-4.72%	14.43%	34	55.88%
CAPE > 20	2.49%	4.46%	-7.11%	13.03%	32	62.50%

Source: Bloomberg 8/31/15.

when markets were the most expensive relative to periods when stocks were just “somewhat expensive.” Again, the conclusion appears to be that in the short term, momentum can lift returns, but when markets stumble at high valuations the results are almost always worse than when a shock hits a more reasonably priced market.

There is a similar pattern looking at three- and five-year returns (see Figures 10 and 11). Again, cheaper is better, but markets have a remarkable ability to levitate for prolonged periods, even when valuations are already high.

The takeaway for investors is that stocks can go, and often do go, higher even at levels exceeding current valuations. That said, based on current valuations, particularly using a CAPE, investors should proceed with caution.

With valuations now above historical norms, investors should expect more muted returns for U.S. equities. A cursory glance at Figures 10 and 11 (Quartile 3) reveals positive years and above-average returns are less likely when valuations are as high as they are today. In addition, the downside risk is more pronounced. When stocks are cheap, even bad periods typically yield positive returns. Looking at five-year forward returns based on the CAPE, the worst quartile of cumulative five-year returns is still more than 30%. Contrast that with the third quartile, when stocks can, and often do, have decidedly negative returns, even over long periods. Put differently, high valuations are much more likely to lead to bad outcomes.

Bottom line: To the extent that the current EM-led slowdown in economic growth continues, investors should not expect valuations to provide much of a cushion.

FIGURE 10: 3-YEAR FORWARD PRICE RETURNS USING CAPE

Quartile	Average	Median	Q1	Q3	Count	Win %
CAPE < 11.6	33.62%	29.24%	12.26%	50.13%	34	88.24%
CAPE 11.6 to 16	19.76%	13.91%	-8.02%	45.25%	32	68.75%
CAPE 16 to 20	6.02%	4.28%	-16.32%	27.73%	33	57.58%
CAPE > 20	12.20%	9.34%	-7.83%	32.66%	31	64.52%

Source: Bloomberg 8/31/15.

FIGURE 11: 5-YEAR FORWARD PRICE RETURNS USING CAPE

Quartile	Average	Median	Q1	Q3	Count	Win %
CAPE < 11.6	61.67%	59.69%	30.42%	82.15%	34	88.24%
CAPE 11.6 to 16	26.40%	18.60%	-6.68%	57.76%	31	67.74%
CAPE 16 to 20	12.89%	0.49%	-15.99%	40.74%	33	57.58%
CAPE > 20	25.29%	8.62%	-6.71%	38.07%	30	63.33%

Source: Bloomberg 8/31/15.

CONCLUSION

"Never express yourself more clearly than you are able to think."

— Niels Bohr

Quantum theory tells us that even the hardest of the hard sciences, physics, has a measurement problem. There are fundamental limits on how precisely we can quantify certain phenomena. It should come as no surprise that a social science presents a far bigger challenge.

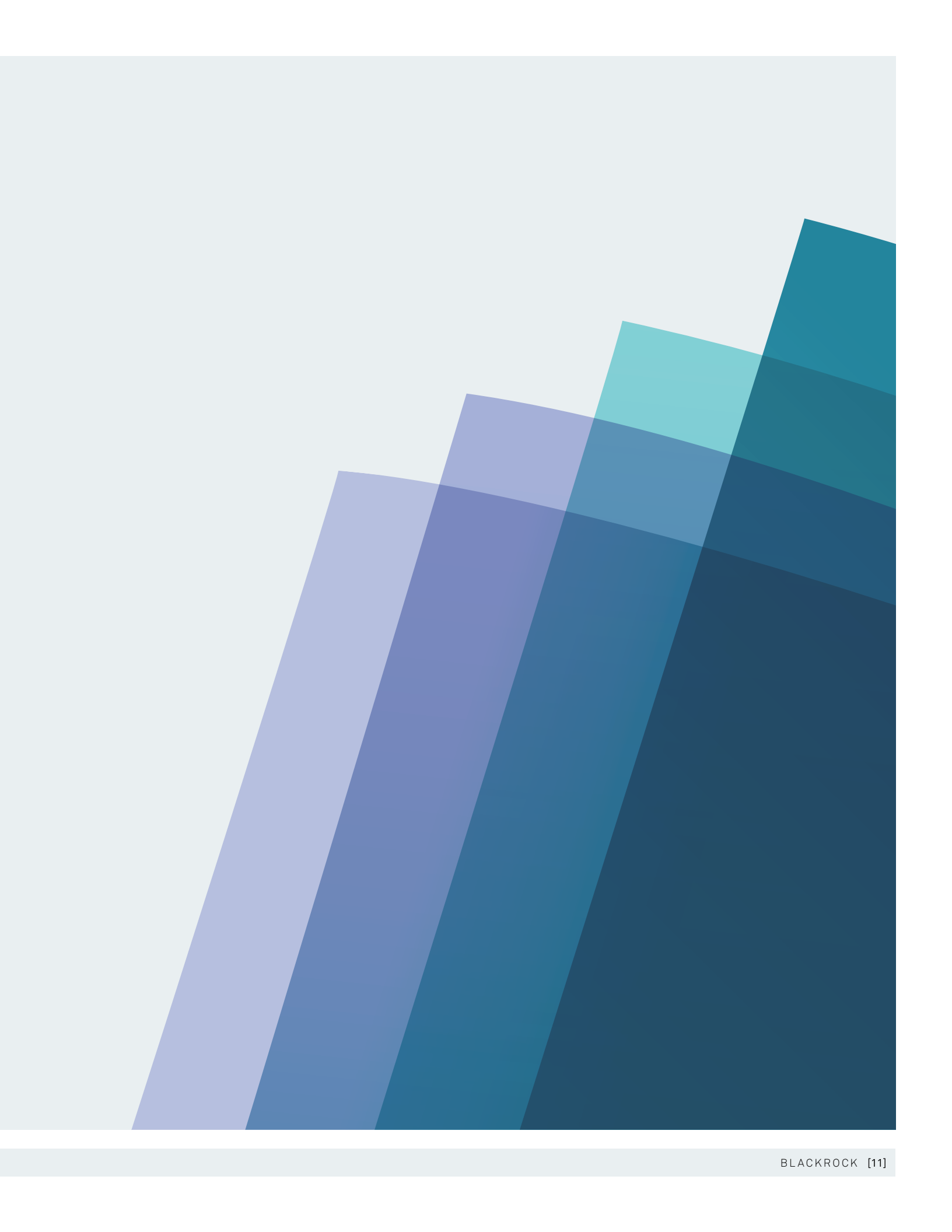
In truth, portfolio management would be a simple science if all that was required was one metric. For example, the market would rarely find itself out of equilibrium as market participants would in a continuous fashion adjust their positioning based on an over/under value output. Yet we know markets can remain in disequilibrium for an extended period.

While value can be described using a variety of metrics, it is an elusive characteristic. Even more humbling, even when you define the particular measure, it is likely to be of only limited value in predicting future returns.

This is part of the challenge with the ERP. While it provides a useful framework for comparing the relative value of stocks and bonds, historically it has been of limited use in predicting future returns for shorter horizons.

Ironically, the more prosaic price-to-earnings metric may prove more useful. P/E metrics provide some indication of the distribution of future returns. Their limitation is that the relationship they describe is not a simple, linear one. As most investors understand, valuation tells you very little about returns over the short term, i.e., a horizon less than one year. Even at longer horizons, future returns do not neatly correlate with past valuations. Markets often perform best, at least for a time, when valuations are highest and momentum is strong.

That said, long-term investors should not ignore current valuations. At the very least, stretched valuations suggest a multi-year period of subpar returns. And under less benign conditions, i.e., an economic or financial shock, losses are likely to be more painful.



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