

Is the “Equity Risk Premium” Elevated Right Now? No.

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If you’ve watched Hedge Fund Manager David Tepper [cheerlead](#) the market on CNBC, or if you’ve read the work of analyst Ed Yardeni, or if you pay attention to stock market discussions on Twitter or in the larger blogosphere, then you’ve probably heard appeals to the “equity risk premium” as evidence that US stocks are attractively priced right now. The thought process goes something like this: “The yield on the ten year treasury bond is around 2%. The trailing P/E ratio on the S&P 500 is around 16, which implies an earnings yield of around 6%. The difference, the equity risk premium, is around 4%, much higher than the historical average of around 1%. Therefore, U.S. stocks are cheap, and should be bought.”



In the previous [post](#), we explained why this way of thinking is flawed. It makes the mistake of assuming that two asset classes on the investment menu, stocks and bonds, cannot both be cheap (offer high future returns), or both be expensive (offer low future returns), at the same time. This assumption simply isn’t true. There is no reason why it should be true, and the historical data confirms that it’s not true. It turns out that the strategy suggested by this way of thinking, which tells investors to overweight stocks until the difference between earnings yields and bond yields approach the 1% average, cannot even be coherently implemented. As I will illustrate later, to implement it, investors would have to willingly accept a subpar return

relative to bonds, when the very purpose of the strategy is to generate a higher return than bonds, in compensation for the higher risk.

Ultimately, there are two ways to think about the “equity risk premium.” We’re going to look at each way. The first way, embodied in the quote and chart above, is just plain wrong. But the second way actually has some validity to it. When we employ it, we find, coincidentally, that stocks are actually fairly valued relative to bonds right now, and may even be a tad overvalued.

The Original Meaning of the ERP

Bullish investors that appeal to the “equity risk premium” (ERP) typically use the term to refer to the difference between the earnings yield of the stock market and the yield on bonds. But this is not what the term, as used by academics, was originally meant to refer to. It was meant to refer to the difference in *return* between stocks and bonds.

The idea that there could be a persistently large difference between the returns of different asset classes was a puzzle originally studied in the [context](#) of the efficient market hypothesis (EMH). If the EMH is true, then we should expect investors to behave in a way that collapses large differences in excess return. Investors should preferentially buy high-return asset classes, and preferentially sell low-return asset classes, until the returns are equal.

Over long periods of history, however, stocks have averaged a return that is meaningfully higher than bonds—around 4%. The term “equity risk premium” was used to refer to this delta. Students of the EMH explain its existence by appealing to risk. Stocks exhibit greater risk than bonds—that is, greater dispersion in return over a given time frame, with wider tails. We know that investors are generally risk-averse. Unlike pure gamblers, they view bidirectional risk as a bad thing, rather than a good thing. Therefore, to invest in stocks rather than lower-risk alternatives, they demand compensation in the form of higher returns. They price the stock market in ways that cause it to achieve such returns.

Yield is Not Return

In the quote and chart shown earlier, the concept of *return* in the historical understanding of ERP is being conflated with *yield*. Thus, the ERP becomes the difference between the earnings *yield* of stocks and the *yield* on bonds. This difference in yield is claimed to be mean-reverting, leading to ridiculous conclusions about where US indices “should” be trading at in the present ultra-low interest-rate environment.

When held to maturity, the return on a bond is just its yield. If you buy a freshly minted 2% 10 yr treasury bond today, and hold it for 10 years, you will receive coupon payments of 2% each year, followed by full repayment of your principal, for an

annual return of 2%. Thus, in the case of bonds, over the long-term, it is correct to equate the 2% yield with an annual return of 2%.

But with stocks, this is not the case. Stocks do not have a maturity. No repayment of principal ever takes place. To realize a return on stocks, or at least to get your money back, you must find other people to sell them to—at a price *those* people find attractive, given their expectations about future price performance. For this reason, the return on stocks is not equal to the “earnings yield”—it is equal to the change in market price, plus the total quantity of dividends distributed. The difference may sound trivial, but as we explained in an earlier [post](#) on liquidity and reflexivity, it changes everything.

If we want to understand the return on stocks in terms of the earnings yield, we can certainly construct a model. But the variable that we need to know is not the earnings yield per se, but rather the *change* in earnings yield (or, more conveniently, the change in its inverse, the PE multiple) from the time of purchase to the time of sale. Mathematically, the total return on stocks is the change in the PE multiple, times the change in earnings, plus the total dividends distributed (as a percent of the purchase price). In other words, if you buy a non-dividend-paying stock at a 9 P/E, and sell it at a 12 P/E, and its earnings grow 10% in the interim, then your return is $(1.2/.9) * (1.10) - 100\% = 47\%$.

If you buy the SPX at 3300, you might be buying at an earnings yield of 3%. But I can assure you that your annual return over the next ten years will *not* be 3%. It will be something closer to -1%. You are a fool, you paid a price for the SPX that, absent a decade of strong earnings growth, no investor will ever be willing to pay you in return, at least not outside of a mania or a bubble.

At the time that you buy the SPX at 3300, the bond yield might be 2%, which would suggest an ERP of 1%, in line with the historical average. But this is irrelevant. A bond purchased at a 2% coupon yield will return 2% over its term, but a stock purchased at a 3% earnings yield will not return 3% over its term—it doesn’t have a term. Therefore, in buying the SPX at 3300, you are not going to receive a 1% annual premium over bondholders. You are going to receive something closer to a -3% annual premium, because, to repeat, you are a fool that bought an asset at a ridiculous price.

The Wrong Way to Use the ERP

What we have, then, are two intended meanings of the term ERP. One meaning is “difference between the earnings yield of stocks and the yield on bonds.” The other meaning is “difference between the return on stocks and the return on bonds.” To avoid confusion, we’ll call the first version of the ERP the CNBC-Twitter ERP. We’ll call the second just the ERP.

Let's assume that investors suddenly become believers in the CNBC-Twitter ERP. They decide that earnings yield equals return, and that stocks should trade with an ERP of 1%, the historical average. As a general rule, they buy stocks—and push up prices—until the stock market's earnings yield is 1% higher than the 10 year treasury yield.

If this behavior is carried out consistently, then we can calculate what the return over the next 10 years will be, using a set of uncontroversial assumptions. Assume the initial earnings are ~\$100. The nominal annual earnings growth rate will equal the average since 1995, ~6%. The dividend payout will be ~35%, also in line with the average since 1995. The dividends will be reinvested by almost all shareholders, and therefore can be approximated as the equivalent of share buybacks that reduce the float. The starting bond yield is 2%, today's value. The bond yield 10 years from now, after the “great deleveraging” and the various QE interventions that have been implemented to support it are over, will be around 4%, close to what it was during the peaks of 2009 and 2010, when investors were expecting a more robust recovery. These are reasonable assumptions. Let's see what happens when investors try to implement the 1% CNBC-Twitter ERP rule in response to them. The starting bond yield is 2%, therefore the starting P/E at which they buy will be 33 (for a 1% CNBC-Twitter ERP). The final bond yield will be 4%, therefore the final P/E will be 20 (again, for a 1% CNBC-Twitter ERP). Therefore, to consistently employ the strategy, they will have to buy *knowing* that, on a set reasonable assumptions, the P/E is going to change from 33 to 20 over the interim period. How is that going to affect their return?

			Net Inc Growth Rate	6.00%				
			Spread b/t EY and TSY	1.00%				
Year	Net Inc	Dividend Payout	10 Year Rate	Price	Shares O/S	SPX EPS	P/E	
2013	100,000.00	35,000.00	0.0200	3333.33	1000.00	100.00	33.33	
2014	106,000.00	37,100.00	0.0220	3347.65	989.50	107.12	31.25	
2015	112,360.00	39,326.00	0.0240	3377.60	978.42	114.84	29.41	
2016	119,101.60	41,685.56	0.0260	3422.08	966.77	123.19	27.78	
2017	126,247.70	44,186.69	0.0280	3480.34	954.59	132.25	26.32	
2018	133,822.56	46,837.90	0.0300	3551.94	941.90	142.08	25.00	
2019	141,851.91	49,648.17	0.0320	3636.68	928.71	152.74	23.81	
2020	150,363.03	52,627.06	0.0340	3734.56	915.06	164.32	22.73	
2021	159,384.81	55,784.68	0.0360	3845.74	900.97	176.90	21.74	
2022	168,947.90	59,131.76	0.0380	3970.56	886.46	190.59	20.83	
2023	179,084.77	62,679.67	0.0400	4109.48	871.57	205.47	20.00	
			Return	2.12%				
			Difference in Return	0.12%				

If we calculate it out (above excel spreadsheet), we find that this compression will erase almost *all* of the the gains received from earnings growth, and therefore, despite supposedly demanding a 1% excess yield over bonds, what the investors will actually have to accept in excess return, if they employ this approach, is **0%**. In other

words, to employ the strategy, they have to accept no relative compensation whatsoever for the added risk that they take on relative to bonds—which, when buying at such a high price, is *not* small.

As conditions in the economy and in markets fluctuate and evolve, individual expectations, preferences, and behaviors will fluctuate and evolve as well. It may be true that the CNBC-Twitter ERP will revert to its mean over a ten year period, but it is unlikely to stay pinned at that mean day to day or month to month. There will be swings, and even a small swing would lead to horrifying losses for the strategy. This source of risk demands more than 0% compensation.

We can see, then, that the strategy represents the equivalent of a *contradiction in terms*. You price stocks over bonds based on a lazy thumb-rule intended to generate appropriate compensation for the risks associated with owning stocks, but then, in the final analysis, you get no compensation at all. Thanks, but no thanks.

Now, remember, this example assumes that, over the long-term, investors will adhere to the 1% ERP rule, so that in 10 years you can close out your investment at the needed price. But we know, in practice, that this isn't true. 10 years from now, it is more likely that the CNBC-Twitter ERP strategy will have been abandoned due to its failures, and that investors will want to buy stocks for a P/E somewhere closer to the historical average, around 15. In that case, the final price will be roughly 3,000, which implies a *negative* 10 year total return, below the return not only of bonds, but of 0% yield cash—an asset that offers perfect liquidity, zero volatility, and zero risk to capital.

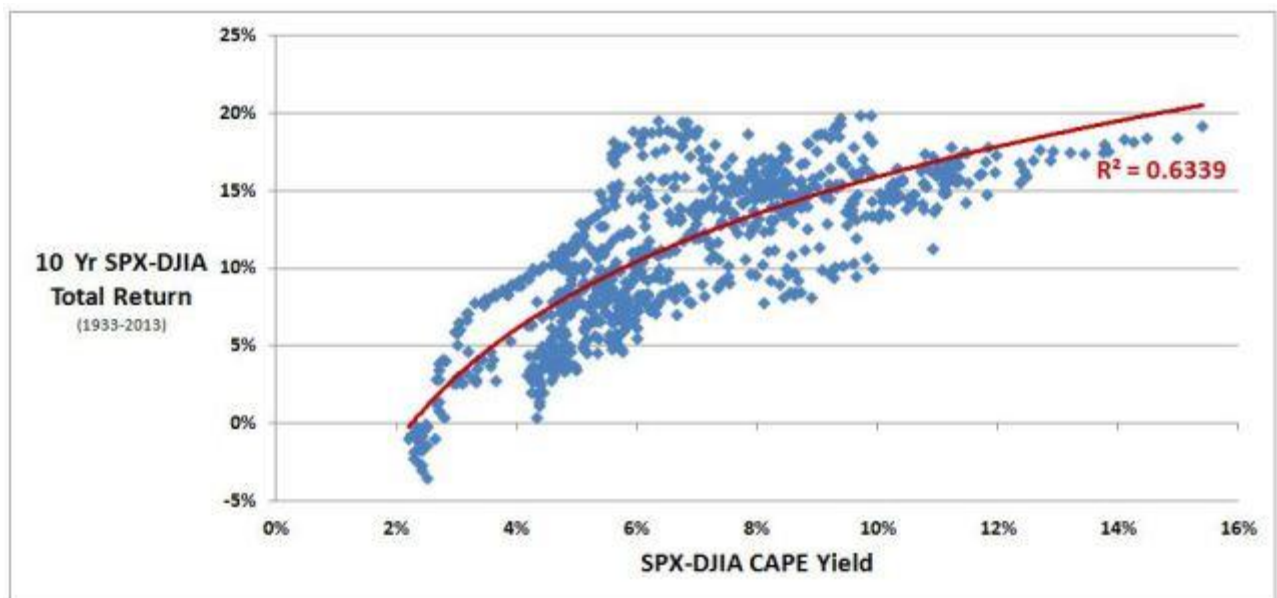
Using the ERP in a Semi-Legitimate Way

Of course, there is a semi-legitimate way to use the ERP. Instead of carelessly equating returns with “earnings yield”, we can look at returns in terms of what they actually will be. Over the next ten years, investors in the 10 year treasury are accepting a 2% annual return. Stocks have historically been priced to produce an annual return that is 4% higher than the 10 year treasury. Therefore, to stay in line with the historical average, stocks right now should be priced to produce a 6% annual return. If they are priced to produce a 10% annual return, or a 15% return, then they are cheap relative to bonds. Unlike the previous way of thinking, this way of thinking actually has some merit to it.

To know if stocks are priced for returns that are commensurate with the 4% annual return differential that they have historically produced over bonds, we need a model to predict what types of returns they are priced for. Obviously, the spread between earnings yield and bond yields won't work. I could tell you that the spread was **-1%** in December 1981, and **-1%** in November of 1998. You would have no way to know,

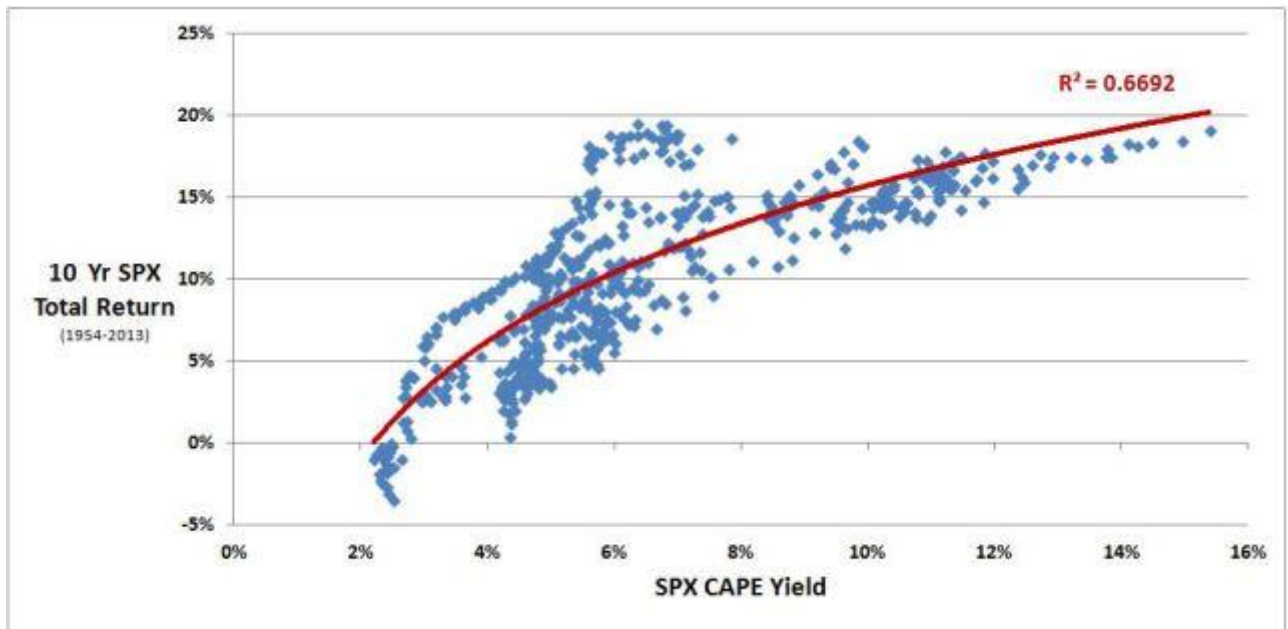
from this irrelevant piece of information, that the future returns on stocks in December 1981 would be a hefty **17%** annualized, and that the future returns on stocks in September of 1998 would be a paltry **3%** annualized.

Though imperfect, the best metric available to predict future equity returns is the Shiller cyclically adjusted P/E ratio, or CAPE. The following chart regresses future 10 year U.S. equity returns against the inverse of CAPE, from April 1933, the month that the gold standard ended in the U.S., to present:



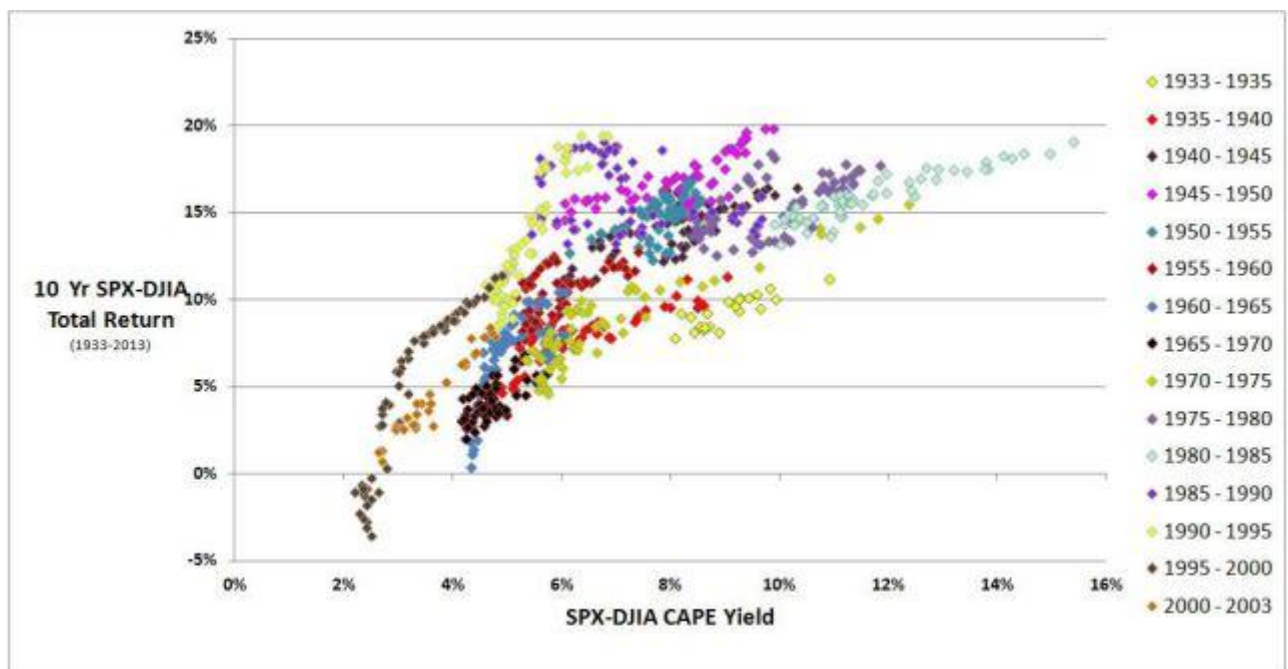
The coefficient of determination in this regression, at **0.634**, would be garbage to a scientist, but to an economist attempting to regress noisy data that aggregates behavior over 80 years, it's actually pretty good.

If we constrict the period further to the years after 1954, the earliest period for which S&P accounting data is available, we get an even tighter regression, with a coefficient of determination of **0.669**:



Right now, if you use pro-forma operating earnings to calculate CAPE, the CAPE yield is **5.1%**. If you use reported earnings, the CAPE yield is **4.2%**. Historically, CAPE yields at those levels have been associated with a wide range of future returns—as high as 10%, and as low 0%.

To make a better comparison to present, we need to look at the specific investment environments that produced the past returns. The following chart color codes each data point based on the 5 year bin into which it falls, back to 1933:



What we see is that the high returns in the current CAPE range of 4% to 5% were produced in the late 1980's and early 1990's. These periods had their 10 year returns artificially boosted by the internet bubble that emerged a decade later. The low single digit returns were produced in the 1960's. This period had its 10 year return

artificially depressed by the inflationary malaise and subsequent recessionary monetary tightening that emerged a decade later.

In truth, neither condition adequately describes the current environment. 10 years from now, we're not going to be in a stock mania, but neither are we going to be in an inflationary malaise that necessitates a series of Fed-engineered recessions. Our aging demographics support neither condition.

Personally, I think it's reasonable to suggest that future total returns for equities will be around 5%. If this guess is accurate, then stocks, which would sport a *true* ERP of around 3%, are slightly historically expensive relative to bonds—but nothing that a one time 15%-20% correction can't fix.

To be charitable, let's assume a 6% return for stocks. If that's the case, then stocks are priced exactly where they should be. The premium in return that equity holders are going to receive over holders of the 10 year treasury is going to be roughly 4%, right at the historical average.

The Problem With a Semi-Legitimate ERP Analysis

There is a problem with this semi-legitimate ERP analysis. The ERP, properly understood as the delta between stock returns and bond returns, is not constant, or even linear, as a function of the starting bond yield. At lower bond yields, the ERP tends to be much higher than at higher bond yields. This matters a ton, because right now we are operating at the low end of the distribution—at a 2% 10 year treasury yield, only 50 bps off the recently set record. The only time in history when bond yields were ever this low was, not coincidentally, the last time the Fed QE'd its balance sheet—the war and post-war periods of the 1940s and early 1950s. The ERP during that period ended up averaging **13%**, versus the 4% that we are currently using in our model.

Of course, this problem is even more extreme with respect to the CNBC-Twitter ERP, which compares yields rather than returns. The CNBC-Twitter ERP changes wildly depending on where the bond yield is in the period of history you sample. If you sample periods of high bond yields—such as the early 1980's—you get negative CNBC-Twitter ERPs. If you sample periods of low bond yields, similar to the current period—such as the 1940's and early 1950's, or even the 1960's—you get a high positive number.

Since 1933, the standard deviation in the CNBC-Twitter ERP is 3.4%. A variable with a mean of 1% is not going to spend much time close to its mean if its standard

deviation is more than 3 times as large. Yet this is what bullish advocates of the CNBC-Twitter ERP are asking that it to do—that it go to its mean right now.

To argue that stock earning yields should revert to some average “premium” over bond yields, without paying any attention to where bond yields are, as if it didn’t matter, is just plain *sloppy*. Unlike bonds, stocks don’t have maturity. This means that as their earnings yields fall, the change in price required to achieve a unit change in earnings yield increases *exponentially* (or, more precisely, as $f(x) = 1/x$). If stocks were to try to keep up with bonds every time bond yields go to the floor, as they did in the 1940s and 1950s, their prices would have to go to infinity—and then violently crash back at the slightest bump in yield.

The Use of ERP in Predicting Memetic Behaviors

The CNBC-Twitter ERP—defined as the spread between the earnings yield and the bond yield—does not have legitimate use as a valuation metric. However, it can still be important to track as a potential catalyst for memetic investor behaviors.

It is possible that the memes “high ERP” plus “stocks are the only place left to get a return” plus “yield chase” will implant themselves into investors’ minds and create the expectation of rising prices, which will cause investors to buy, which will push prices higher, which will validate the prior expectation of rising prices, which will increase confidence in this way of thinking, which will lead to even more buying, and so on, in a positive feedback loop. If an investor has the insight to get in front of such a process, he obviously should. In that sense, the CNBC-Twitter ERP is probably something that is still worth paying attention to—not as a concept that has fundamental merit in itself, but as a concept that can influence the thinking and the behavior of other people.

We have to remember, however, that this process cuts both ways. If the economy improves, and the Fed hints that they might “taper”, a new meme will have been inserted. This meme will cause investors to fear losses, and to therefore sell, which will lower prices, which will confirm the validity of the thinking that led them to sell, which reinforce that thinking, creating more selling, in a negative feedback loop. “Taper” may not be a fundamental reason to sell, just as “high ERP” is not a fundamental reason to buy—but it doesn’t matter. All that ever matters in a market is what buyers and sellers *do*, regardless of whether their thinking is fundamentally sound.