



# Risk Management PERSPECTIVES

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## Reasonable Expectations for the Long-Run U.S. Equity Risk Premium



Expectations for the long-run equity risk premium play an important role in asset allocation decisions because the policy asset mix between equity and fixed income depends on the tradeoff between expected return and risk. The higher the expected equity risk premium the more equity will be held in the portfolio. To give some perspective about what might be reasonable to expect in the future, we first show historical values for the U.S. equity risk premium. Second, we break the equity risk premium into its component parts and suggest some reasonable values for the components going forward. Finally, we present expectations from several other written sources.

***Roger G. Clarke, Ph.D and  
Harindra de Silva, Ph.D.***

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## HISTORICAL DATA

A number of studies have calculated the U.S. equity risk premium over extended time periods. The table below shows the historical estimates from various sources:

Study	Dates Covered	U.S. Equity Premium*
Dimson, Marsh & Staunton	1900-2000	5.6%
Fama & French	1872-2000	5.6%
Mehra & Prescott	1890-1979	6.0%
Ibbotson	1926-1999	7.5%
Siegel	1926-1990	6.1%
Siegel	1802-1925	1.9%
Fama & French	1872-1950	4.4%
Fama & French	1951-2000	7.4%

\* The compound, annualized rate of return (geometric mean) on equities minus the compound, annualized return on short-term government debt.

Notice that over very long time periods the average U.S. equity risk premium has been between 5 and 6 percent though over shorter time periods the actual risk premium is quite volatile. The range of yearly ex post annual risk premiums often falls between -30 to +40 percent depending on the measurement period.

Furthermore, there have been periods of several years in a row where returns have been substantially below or above average.

Some have argued that the historical risk premium has been greater than what might have been reasonably expected. They cite the survivorship bias inherent in examining the U.S. market that has been one of the most successful in the world.

Many other markets have had lower risk premiums than the U.S. and may be more representative of what equilibrium equity risk premiums should be. The historical evidence from Dimson, Marsh, Staunton (2000) presented in the table to the right gives some perspective as to the long-term risk premiums from countries other than the U.S. The U.S. experience is a little above average over the century with some countries higher and some lower.

Country	Realized Equity Risk Premium 1900-2000
Australia	7.1%
Belgium	3.0%
Canada	4.6%
Denmark (from 1915)	2.5%
France	7.5%
Germany (ex. 1922-23)	4.9%
Ireland	4.3%
Italy	7.0%
Japan	6.8%
Netherlands	5.1%
Spain	4.1%
Sweden	5.8%
Switzerland (from 1911)	4.3%
UK	4.7%
US	5.6%
Average	5.1%

## DECOMPOSITION OF THE EQUITY RISK PREMIUM

Using a simple model for long-term returns we can decompose the total equity return into three parts:

- 1) Equity return = dividend yield + nominal earnings growth + P/E growth

	50 Years Through 2000	20 Years Through 2000
Yield	4.0%	3.5%
Nominal Earnings Growth	6.6%	6.2%
P/E Growth	2.5%	6.7%
<i>Total Equity Return</i>	<u>13.1%</u>	<u>16.4%</u>
ST Government Rate	-5.7%	-6.0%
<i>Equity Risk Premium</i>	<u>7.4%</u>	<u>10.4%</u>

AllianceBernstein has calculated the components of the annualized U.S. equity return over the past twenty and fifty years.

Subtracting the short-term government rate that embodies a real interest rate and expected inflation gives the equity risk premium as:

- 2) Equity Premium = yield + real earnings growth + P/E growth – real ST rate

Notice that the expected equity risk premium can be expressed as the dividend yield plus the real earnings growth rate plus the P/E growth rate minus the real short-term interest rate.

## DEVELOPING REASONABLE EXPECTATIONS

The use of the framework above requires making some reasonable estimates for each of the parameters that might be expected to hold over the investor's investment horizon. The dividend yield on the U.S. equity market has been trending downward for many decades as firms have paid out a smaller fraction of their earnings while P/E ratios have expanded. The current dividend yield on the U.S. equity market is approximately 2 percent. Over long periods of time the real earnings growth for the U.S. has been approximately 3-4 percent. Since the share that corporate profits represent of gross domestic product (GDP) has been relatively stable over time, real growth in earnings has approximated the real growth in the aggregate economy.

We noted that the P/E growth over the past twenty years has added substantially to the total equity return. The P/E ratio based on trailing earnings has averaged approximately 14 times earnings but has varied widely depending on the business cycle and the level of interest rates and inflation. Currently the P/E ratio for the U.S. market is around 30 times trailing earnings and is approximately 19 times expected 12-month earnings. Given that the current P/E ratio is above average and that the U.S. market is currently struggling to recover from its substantial decline since 2000, an investor would probably not anticipate that P/E growth would continue to be positive. It is reasonable to expect that growth in earnings and dividends are sustainable over the long run, but growth in P/E ratios cannot be sustained indefinitely into the future without developing in an unstable market bubble. For our purposes we assume that growth in P/E ratios will be zero over the investment horizon though some have argued that it might easily be negative as P/E ratios return to a more normal level.

The real short-term interest rate has averaged about one half of one percent in the U.S. in the last century though with the current steeply-sloped yield curve, the real short-term rate is artificially depressed and is approximately zero. The real interest rate inferred from the U.S. Treasury Inflation Protected Securities (TIPS) is somewhat higher and is probably closer to 1-2 percent.

Using these expectations for the respective components gives an estimate of the expected long-run equity risk premium of:

$$3) \text{ Equity premium} = \text{yield} + \text{real earnings growth} + \text{P/E growth} - \text{real ST rate}$$

$$= 2.0 \% + 3.5 \% + 0 \% - 1.5 \% = 4.0 \%$$

The four percent expected long-run equity risk premium has a lot of assumptions built into it. A lower level of expected real earnings growth or negative P/E growth could easily lower the expected equity risk premium to three percent or less. However, too low of an expected risk premium starts to strain the credibility of equilibrium risk/return relationships, because it is hard to imagine that investors would be satisfied to bear the risk of equity returns for only a small expected return above the short-term risk free rate.

The justification for the lower expected equity risk premium relative to history is often framed as a result of the growth of the "equity culture" in the U.S. It is argued that investors have become more tolerant of the short-term market fluctuations and have moved toward holding higher proportions of equity in their portfolios to capture the long-term returns. This move has driven equity prices up in recent years resulting in higher historical returns while investors are content with lower expected returns going forward.

### Additional Sources

A decline in expectations for the equity risk premium has been a favorite topic in much of the recent literature. The table below presents some recent expectations from a variety of studies.

Source	Equity Risk Premium	
Arnott & Bernstein (2000)	2.4%	Notice that nearly all of the expected equity risk premiums are lower than the historical experience in the U.S. Most of the writers have suggested that investors lower their expectations about the returns in the U.S. equity markets going forward. The one exception is that of Kurz and Motolese. Their estimates come from a very different framework with regard to the long-term equilibrium equity risk premium as they try to capture
Warren Buffett (2001)	3.0%	
Ibbotson & Chen (2002)	4.0%	
Frank Russell (2002)	3.0%	
Goldman Sachs (2002)	3.0%	
AllianceBernstein (2002)	4.5%	
Kurz & Motolese (2001)	7.0%	

investor behavior in a full equilibrium framework. However, they would not disagree that the risk premium over shorter, tactical horizons could be less than their long-run estimate.

It is important to distinguish between long-run equilibrium expectations for the equity risk premium and short-term tactical expectations. Investors may have very different views about the short term than they do about the long term. Furthermore, it is unlikely that investors will all agree in their tactical expectations. However, it would be unreasonable to suggest that all investors could have negative expectations for the

short-term equity risk premium because that would not be a stable market scenario. If the preponderance of investors all felt the same way, the market would adjust until the consensus of revised expectations resulted in a more stable market environment. We have dealt primarily with long-run equilibrium expectations in this note. We have not tried to develop shorter-run tactical expectations.

What seems clear from the historical evidence is that a reasonable expectation for the long-run equity risk premium is probably in the 3-6% range. The typical volatility for the equity markets is usually between 15-20%. Taking the ratio between the two gives a range of return/risk tradeoffs of 0.15-0.40. What is striking is that the ratio of return premium to risk is so low for the equity markets. As a result, it is not surprising that investors continue to look for other investment alternatives that might give a more attractive tradeoff between risk and the return premium. This may belie some of the popularity of alternative investment strategies in recent years.

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