

[How are asset class risk premiums and the risk free rate of return related?](#)

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How are asset class risk premiums and the risk free rate of return related?

Summary: Risk premiums are estimated relative to a baseline "risk-free" rate of return. The risk free rate of return in the scientific investment literature has been measured by either short-term U.S. T-bills or by long-term U.S. T-bonds. Risk is inherent in investing, and asset risk premiums compensate investors for the risks that they bear. This article explains the various ways that the risk free rate of return or risk free interest rate may be defined. The way the risk free rate is defined will affect the size of measured investment risk premiums. (See also: [Asset class investment risk premiums -- your reward for taking investment risk](#)) Total investment returns are composed of three components: 1) inflation, 2) the risk free rate of return, and 3) the risk premium for a particular risky investment class. Risk premiums are measured in "real or non-inflationary" terms, after inflation and the risk free rate have been removed from the numbers. In particular, to derive the real return, inflation is subtracted from the total or nominal investment return. With a real return purchasing power is held constant over time. In real terms, a loaf of bread would cost the same in fifty years. Next, the risk free rate of return is subtracted from the real return, and what remains is the real risk premium for a particular investment asset class. Across various investment research studies, the definition of the risk free rate of return has varied, which can lead to some confusion when interpreting historical investment risk premiums.¹ It is helpful to understand the definitions of the risk free rate of return, so that you can properly gauge the investment returns that you might derive from bearing investment risk. The risk free rate may be defined as: 1) a nominal riskless interest rate, which includes inflation, 2) a short-term riskless real interest rate, which excludes inflation, or 3) a longer-term riskless real interest rate, which excludes inflation. Usually investment studies use 2) short- or 3) long-term real rates. Many studies use a short-term interest rate based on U.S. T-bills, as the risk free rate of interest. The backing by the "full faith and credit" of the U.S. government and the short maturity of these instruments reassure their holders of liquidity, stability of value, and a very low financial risk in holding them. In general, when averaged over long periods, the short-term U.S. risk free rate of return has exceeded inflation by a small amount. During the 20th century the annualized short-term risk free rate of return, measured by very short-term U.S. T-bills exceeded inflation by about .9% per year. There have been significant fluctuations around this figure and extended periods of higher, lower, and even negative risk free interest rates. Whenever the risk free rate of return is measured using short-term interest rates, which are generally lower, then the resulting risk premium will be higher. This higher measurement of the risk premium actually combines the risk premiums that the market pays for longer-term fixed income assets and the additional risk premium paid for equity investments. Sometimes investment research studies, particularly those attempting to isolate the risk premium that is solely attributed to holding equity investments, will use longer-term U.S. T-bond rates as the risk free rate. The objective may be to match the longer expected holding periods for equities to the longer duration of bonds. When longer-term interest yields such as U.S. T-bonds are used as the risk free rate, then the resulting risk premium will be lower, because longer bond rates are generally higher than shorter-term interest rates. The resulting risk premium will measure solely the market premium for holding equities over

longer periods. In such longer-term comparisons, however, it is important to note that the “risk free rate” on longer bonds will actually contain certain financial risks. When the U.S. T-bonds are used, the government is not expected to default on them, of course. Therefore, they are considered relatively riskless from the standpoint of default. However, T-bonds are still subject to reinvestment risk at maturity, if inflation and/or interest rates have changed.

These related articles may also be useful to you: [Returns and Risk Premiums: ->What have average investment asset class risk premiums been over long periods? ->How stable have common stock equity risk premiums been over time? ->What explains the recent common stock equity risk premium? ->What might explain the dramatic rise in common stock equity prices during the 1980s and 1990s? ->How do individual investors’ recent portfolio return expectations compare to long-term historical common stock returns and equity risk premiums? ->What common stock returns might individual investors expect going forward? ->What happens to the expected equity premium, when the common stock P/E ratio reverts toward historical norms? ->To estimate the future common stock risk premium, how might individual investors extrapolate from the past? Securities Valuation: ->Introduction to investment valuation and securities risk ->How investment securities are valued -- snapshots in time ->The confusing investment securities market motion picture ->What is efficient market pricing in the securities markets? 1\) For an extensive survey of available studies on the various components of equity investment returns, see Derrig, Richard A. and Elisha D. Orr. “The Equity Risk Premium: Expectations Great and Small.” Version 3.0, August 28, 2003 \[Derrig and Orr 2003\]](#)