

## **The Equity Risk Premium**

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The equity risk premium, the rate by which risky stocks are expected to outperform safe fixed-income investments, such as US government bonds and bills, is perhaps the most important figure in financial economics. The equity risk premium is the main input in both the capital asset pricing model, and in asset allocation decisions between stocks and bonds. If investors have a more objective idea of the relative returns to stocks, bonds and cash, they can make better decisions about how to invest their money into these three asset classes.

Anyone who has money in a retirement plan must decide how to allocate their money between stocks, bonds and cash. The equity risk premium indicates how much more an investor may earn by investing their money in the stock market rather than in government bonds. If the equity premium is high, people should allocate more of their portfolio to stocks, if it is low, then more to bonds.

Despite the importance of the equity risk premium, there is no agreement over its true value because the equity risk premium, unlike the speed of light, is not a number whose value is fixed, because it changes over time. Current estimates of the equity risk premium are quite wide. Some analysts estimate that the equity risk premium could now be zero (Robert Arnott and Ronald Ryan, "The Death of the Risk Premium: Consequences of the 1990's," *Journal of Portfolio Management*, Spring 2001). On the other hand, a recent survey of academic financial economists by Ivo Welch found an average forecast of the arithmetic equity risk premium at 7% over 10- and 30-year periods, with estimates ranging between a low of 2% to a high of 13% (Ivo Welch, "Views of Financial Economists on the Equity Premium and Other Issues," *The Journal of Business* 73-4, October 2000, pp. 501-537).

There are two basic problems with determining the value of the equity premium. First, we don't know what the returns to stocks and government bonds will be in the future, and nobody can predict the future. Second, measurements of the historical equity risk premium depend upon two important factors—the starting date for investing in stocks and bonds, and the length of time used to measure the returns to stocks and bonds. Historical returns to stocks and bonds, and the difference between them, depends highly upon whether the period that is analyzed begins in 1929 or in 1932, or ends in 1999 or in 2002. Returns also differ dramatically whether the time frame is the 50 years between 1952 and 2002, the 30 years between 1972 and 2002 or the 10 years between 1992 and 2002.

Investors must examine the past to discover what has already happened, and form expectations about what they believe is going to happen in the future. The purpose of this article is to provide objective information about the past and how investors may use this information to form conclusions or expectations about future returns. With this information, investors should be able to make better investment decisions.

### **WHAT DETERMINES THE EQUITY RISK PREMIUM?**

Let's assume that investors can put their money into cash, bonds or stocks. What rate of return should they expect from each? People put their money into cash for safety and liquidity. They don't want to lose money, so their returns should at least protect them against inflation so there is no loss in purchasing power. Hence, the return to cash should at least equal the inflation rate.

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The return to a safe, long-term investment should equal the rate of growth in the economy. Investors will demand compensation for giving up access to their funds for several years at a time. If historically, GDP has grown at 5% in nominal terms, then the return to risk-free bonds should also be 5%. Corporate bonds offer additional risks because they face default risk, and even AAA corporate bonds yield about 1% more than US Government Treasury bonds. Shareholders face the greatest risk because they are residual owners in the firm and are paid last. The equity premium measures the additional returns to stocks that shareholders receive to compensate them for the high level of risk they face.

How can investors determine what an appropriate return would be? To predict the future return on cash, investors would need to estimate the future inflation rate. To predict the return to bonds, investors would need to estimate the future nominal growth rate in the economy. To predict the future return to stocks, investors would need to estimate the future growth in corporate earnings or cash flows, the riskiness of those earnings, and how much compensation they should receive for incurring that additional risk. Since inflation, economic growth, and corporate profits fluctuate over time, expectations about the future will change and the returns to stocks, bonds and cash will change as a result. In the short run, speculative investing in the market affect returns and add to the volatility of stock market returns, as investors witnessed in the late 1990s.

For fixed-income investors, the primary risk they face is inflation. Inflation reduces the purchasing power of their interest payments, and creates losses to bond holders as inflation increases interest rates and in turn reduces the value of bonds. Rising inflation in the United States in the 1960s and 1970s hurt bond investors, reducing real returns on bonds to zero. For equity investors, the primary risk is lower corporate earnings and the expectation that there will be lower earnings in the future. The optimal situation for investors is one of declining inflation (raising the returns to bondholders) and rising earnings (increasing the returns to shareholders).

The goal of each investor is to estimate what they believe will happen to inflation and earnings in the future. Then based upon these expectations, investors must determine how to allocate their money between stocks and bonds to get the optimal return to their portfolio. Expectations of increasing earnings and rising inflation favors stocks, while expectations of falling earnings and falling inflation favors bonds. This fact can be seen in investors' behavior in the past. Investors favored bonds in the 1980s when interest rates were falling, and investors favored equities in the late 1990s when expectations about future earnings were high.

In short, rational investors must try to predict future inflation, the future growth in the economy, and future corporate profits in order to determine how to best invest their money for the future. Every investor has different expectations about the future, different tolerances for risk, and different periods of time in which they need to invest their money. Everyone has to make investment choices based upon these three variables.

## ESTIMATING THE EQUITY RISK PREMIUM OVER TIME

Since we can't know what the equity risk premium will be in the future, let's look at what the equity risk premium has been in the past. There are two ways of doing this. One method is to

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assume a single starting date, such as 1925, and measure returns to stocks and bonds from that date. The second method is to take a fixed period of time, such as 10, 20 or 30 years, and see what returns have been for that period of time. The first method would always start in 1925. The second method would change the starting date every year to maintain a fixed investment period.

To calculate returns, we used the S&P Composite for returns to stocks, and 10-year Government Treasuries for the risk-free return to bonds. Dramatically different results are obtained depending upon the starting date. At the end of 2001, the equity risk premium was 4.85% if the holding period was from 1900 to 2001, 5.07% if the holding period was from 1925 to 2001, 5.74% if the holding period was from 1950 to 2001, 3.26% if the holding period was from 1971 to 2001, but 4.96% if the holding period was from 1991 to 2001.

A second approach is to measure returns over a suitable investment horizon. Although may be beneficial to know what returns have been to stocks and bonds over the past 50 or 100 years, few people invest for a 50- or a 100-year period. Individuals who are investing for their retirement would be more likely to invest for a 20- or 30-year time period, saving money in their 30s and 40s, and drawing the money out in their 60s and 70s. Hence, a review of returns and the equity risk premium over 30-year holding periods would probably give investors a more objective estimate of what they could expect in the future.

The table below provides an interesting perspective on how the returns to stocks and bonds have changed over time. It also gives a good understanding of the returns investors probably expected to receive at different points in time. For example, someone investing in 1941 who looked at investment returns between 1911 and 1941 would have expected a 5.23% return to stocks and a 3.92% return to bonds for the next 30 years, but between 1941 and 1971, the investor would have received a 13.34% return to stocks, but only a 2.58% return to bonds. On the other hand, investors in 1971 might have expected a 10.5% equity risk premium based upon the actual returns between 1941 and 1971, but the actual equity premium between 1971 and 2001 was a 3.3% equity premium. As the cliché goes, past performance is no guarantee of future returns.

Over the past 20 years, the average return for 30-year holding periods for stocks has been 10.9% with a range between 9.5% and 13.3%. The average return to bonds for the same period was 7.1% with a range between 2.6% and 9.0%. The average equity premium was 3.6% with a range between 2.2% and 10.4%.

The equity premium appears to have gone through three phases in the past 100 years. In the first phase, the return on equities exceeded that on bonds by around 1.5% to 2.5%. In the second phase, higher returns on equities raised the equity premium to as high as 10% during the 1960s and 1970s. In the third and current phase, the equity premium has shrunk as the returns to bonds have increased. The equity premium in the most recent period has been around 3%.

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### The Equity Risk Premium for 30-year Holding Periods

Ending Year	30-year Return on Stocks	30-year Return on Bonds	30-year Equity Premium	30-year Average Inflation Rate
1871-1901	6.64%	4.37%	2.18%	-0.36%
1881-1911	5.85%	3.24%	2.53%	0.60%
1891-1921	5.88%	3.27%	2.53%	2.89%
1901-1931	5.26%	3.42%	1.77%	2.18%
1911-1941	5.23%	3.95%	1.23%	1.64%
1921-1951	9.47%	3.38%	5.90%	1.43%
1931-1961	12.89%	2.68%	9.96%	2.43%
1941-1971	13.34%	2.56%	10.51%	3.30%
1951-1981	9.91%	3.06%	6.64%	4.31%
1961-1991	10.26%	7.45%	2.61%	5.22%
1971-2001	12.25%	8.71%	3.26%	4.98%

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1981-2001	15.24%	11.58%	3.28%	3.21%
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## WHY DID THE RETURNS TO STOCKS AND BONDS CHANGE IN THE PAST?

There were two stages in the changes to investment returns. The first change was an increase in the returns to equities, beginning in the 1950s. This increase came primarily through higher capital gains rather than through higher dividends since dividends have actually decreased over time. Until 1959, the dividend yield actually exceeded the yield on government bonds, and until 1990, the dividend yield rarely fell below 3%. Today, the dividend yield is around 1.3%, less than the inflation rate, and about 4% less than the yield on long-term government bonds.

Returns to equities increased after the 1950s because a stable global economic environment replaced the economic and political chaos of the 1930s and 1940s. This led to an expansion in expectations of future corporate profits, increasing the Price/Earnings ratios for stocks, and producing large capital gains for investors. Higher inflation in the 1960s and 1970s reduced returns to fixed-income investors. Throughout the 1970s, the nominal 30-year return to bondholders was less than the inflation rate over the previous 30 years. The combination of these two factors produced a sharp increase in the equity risk premium, pushing it over 10% by 1971.

The second change occurred when Paul Volcker began to attack inflation in the early 1980s, bondholders saw sharp increases in their returns. The increase in the return to bonds reduced the equity premium and allowed bondholders to once again receive returns that exceeded the inflation rate. Although returns to bonds in the 1980s were comparable to the returns to equities due to both high coupon interest and capital gains, the stabilization of interest rates in the 1990s has reduced capital gains to bondholders lowering the overall returns to bonds. Although the return to stocks remained high, bonds provided higher returns, reducing the equity risk premium. Consequently, the equity risk premium has been closer to 3% during the past two decades.

For investors today, the question they should ask themselves is what they expect to happen in the next 10, 20 or 30 years. Will the economy return to the conditions of the 1950s and 1960s when there was rising earnings and rising inflation that favored equities, of lower earnings and lower inflation that would favor bonds, or to a more stable environment of steady growth and inflation?

## INVESTORS AND FUTURE EXPECTATIONS

What can or should investors expect about future returns to stocks and bonds?

Let's look at bonds first. There has been an important change in the risks that fixed-income investors face. As stated before, the primary risk that fixed-income investors face is inflation.

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Since 1997, investors have been able to invest in inflation-linked government bonds (TIPS) that protect them from negative real returns on government bonds. TIPS have yielded 3-4% over the inflation rate since 1997. Even if investors expect higher inflation in the future, they can use TIPS to protect themselves against inflation risk. This means that a repeat of the situation in the 1960s and 1970s when rising inflation reduced returns to fixed-income investors and increased the equity premium is less likely to occur in the future. If equities provide a significant return over bonds, it will have to come from superior returns to stocks, not from inferior returns to bonds.

What about future inflation? The government is primarily responsible for long-term inflation in the United States. The primary responsibility of the Federal Reserve is to preserve the purchasing value of the United States Dollar. Although short-run inflation can come from changes in supply and demand, long-run inflation can only come through growth in the money supply. At this point in time, there is no reason to expect a significant increase in inflation in the immediate future.

Now, let's look at stocks. Lower inflation in the future should reduce nominal returns to stocks, but should not affect real returns after inflation. The 1990s provided investors with unprecedented, high returns as a result of the boom in technology. The US stock market has been in a bear market since April 2000 because expectations about future corporate earnings have fallen in the past two years. But what should investors expect about the future?

Despite the decline in the market during the past two years, there is no reason to believe that there is a permanent decline in the profitability of the corporate sector. Once the current bear market has ended, there is every reason to believe that investors should continue to expect an equity premium of 3-4% in the future, similar to what long-term investors have received on average during the past two decades. Historically, the stock market has never provided a negative return for a fifteen-year holding period.

Nevertheless, bull and bear markets are an unavoidable aspect of the stock market, and investors should expect that there will be periods when equities far outperform bonds as in the 1990s and periods when the differences between them is small, as in the 1980s. It should be remembered that the only time period in which bonds outperform stocks is when there is a bear market.

We hope that this paper has given individual investors a better understanding of the factors that determine the returns they receive on their investments by looking at how the returns to stocks and bonds have changed over time. By understanding the underlying causes of these returns—changes in inflation, changes in corporate profits and growth in the economy—investors can form better expectations about what to expect in the future. Armed with this knowledge, they can determine what portfolio holdings best meet their future investment needs. Investors can learn to adapt as the market changes and make better investment decisions in the future.