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Recessions and balanced portfolio returns

Vanguard research

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Executive Summary. Given the rising risk of a renewed U.S. recession, investors may wonder about the merits of a more “defensive” posture for their broad portfolio. To provide perspective, we calculated the historical returns of a balanced 50% equity/50% bond portfolio under two distinct U.S. business-cycle regimes: recessions and expansions. We show that the average real returns of such a portfolio since 1926 have been *statistically equivalent regardless of whether the U.S. economy was in or out of recession.*

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Although it may seem counterintuitive, this similarity in average real returns has occurred because of two typical market patterns: first, the tendency for bonds to outperform stocks during the initial period of economic weakness (a “flight-to-safety” effect), and second, the tendency for stock prices to decline before a recession officially occurs and to rise before it officially ends (a “leading indicator” effect).

While a recession is always unwelcome, our results support the utility of an investment program focused on a diversified, long-term strategic asset allocation, and should give considerable pause to those who recommend a more tactical or reactive approach to investing.

A challenge to conventional wisdom

The risk of a renewed U.S. recession has risen during 2011, with some economists suggesting the odds exceed 50%. Should the U.S. economy officially fall into recession this year or in 2012, conventional wisdom assumes that stock market returns inevitably will be poor, given the recessionary environment of depressed corporate earnings, higher unemployment, and crimped consumer and business spending. Faced with this prospect, investors may wonder whether they should shift their broad portfolios to a more “defensive” posture by reducing their stock holdings to mitigate losses.

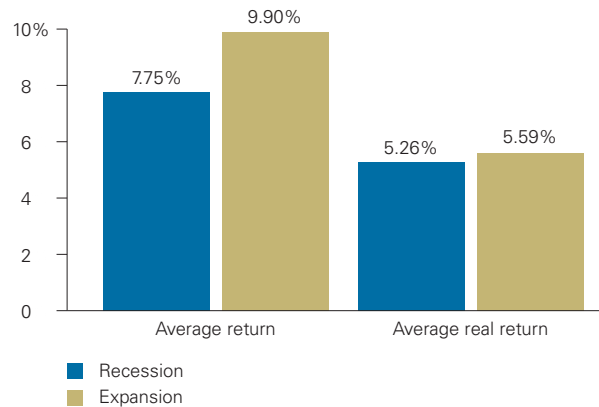
But is such conventional wisdom correct? Do average stock and bond returns really vary that dramatically between recessions and expansions, and in such a manner that investors should adjust their portfolios accordingly? To provide perspective, we calculated the historical returns of a hypothetical 50% equity/50% bond portfolio under two distinct U.S. business-cycle regimes: recessions and expansions, as defined officially by the National Bureau of Economic Research (NBER).¹

Figure 1 shows the average annualized returns—both nominal and real, or inflation-adjusted—for our balanced portfolio using monthly data from 1926 through June 2009, the end of the last recession. (The subsequent expansion is excluded because its dates are not yet defined.) The main implication of Figure 1 is that the average returns on such a balanced portfolio over that span have been *similar regardless of whether the U.S. economy was in or out of recession*. This is particularly true of the inflation-adjusted returns, because inflation tends to be higher during periods of stronger economic growth. And while the bars in Figure 1 are not numerically identical, they are “statistically equivalent”² in light of the wide range of actual returns observed across recessions and expansions since 1926.³

Indexes used in our calculations

The returns for our hypothetical 50% stock/50% bond portfolio are based on the performance of appropriate market indexes. When determining which index to use and for what period, we selected the one we deemed to fairly represent the characteristics of the relevant market, given the available choices. For U.S. bond market returns, we use the Standard & Poor’s High Grade Corporate Index from 1926 to 1968, the Citigroup High Grade Index from 1969 to 1972, the Lehman U.S. Long Credit Aa Index from 1973 to 1975, and the Barclays Capital U.S. Aggregate Bond Index thereafter. For U.S. stock market returns, we use the Standard & Poor’s 90 from 1926 to March 3, 1957; the S&P 500 Index from March 4, 1957, to 1974; the Dow Jones Wilshire 5000 Index from 1975 to April 22, 2005; and the MSCI US Broad Market Index thereafter.

Figure 1. Average annualized returns for a 50% stock/50% bond portfolio in full U.S. recessions and expansions, 1926–2009



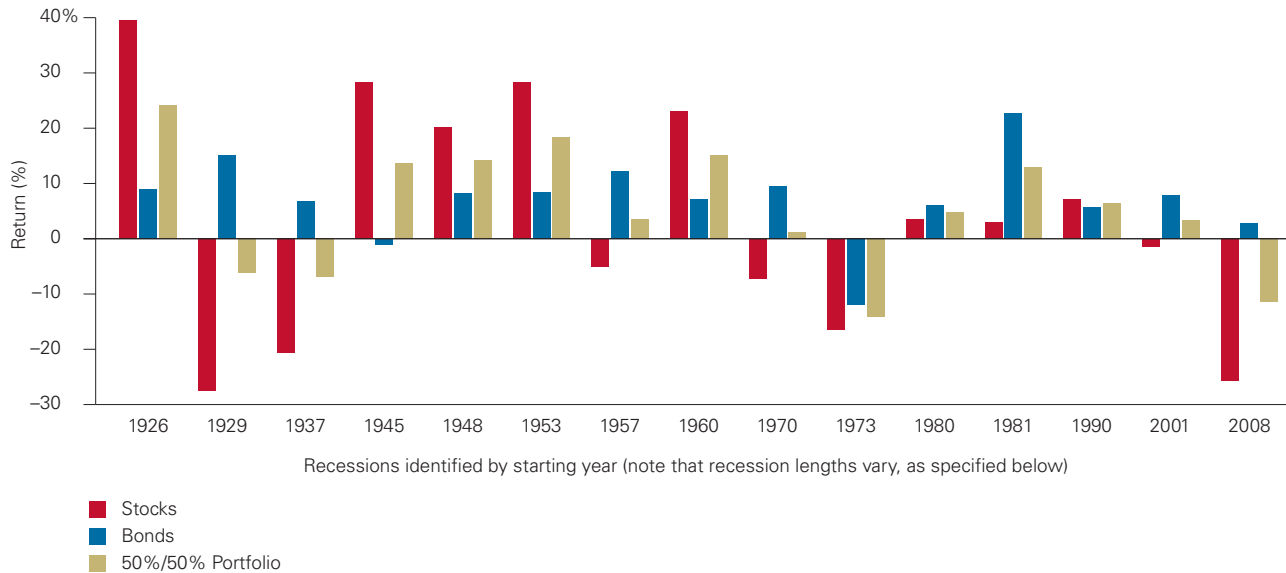
Note: Real returns were calculated using monthly nominal asset-class returns adjusted for inflation on the basis of monthly Consumer Price Index (CPI) data. We used both nominal and real monthly returns to calculate an annualized geometric return for the periods labeled either expansionary or recessionary by the National Bureau of Economic Research (NBER). The hypothetical 50% stock/50% bond portfolio is rebalanced each month. This figure includes returns only through June 2009 (the end of the 2008–2009 recession) because the time frame of the subsequent expansionary period is not yet determined. (See page 6 for more information about geometric returns.)

Source: Vanguard calculations using data from the U.S. Bureau of Labor Statistics (BLS), the NBER, and index returns.

Past performance is no guarantee of future returns. The performance of an index is not an exact representation of any particular investment, as you cannot invest directly in an index.

- 1 The U.S. economy is always in either recession or expansion, but its “official” status can be difficult to know in real time. This is because the NBER announces the starting and ending points of business cycles only after a lag that can be longer than one year. For details, see the Vanguard white paper *Defensive Equity Investing: Appealing Theory, Disappointing Reality* (Davis and Philips, 2007).
- 2 We tested whether the average return bars in Figure 1 were statistically equal between recessions and expansions. Both mean and median equality tests fail to reject the hypothesis that the average returns are identical between recessions and expansions, with p-values above 0.90. (See page 6 for more information about p-values and statistical equivalence.)
- 3 To be sure, portfolio real return volatility has been historically higher during recessions than during expansions, and so risk-adjusted returns have been lower during recessions.

Figure 2. Real annualized index returns during recessions since 1926



Note: Performance was calculated using monthly nominal asset-class returns adjusted for inflation on the basis of monthly CPI data. We used real monthly returns to calculate an annualized geometric return for recessionary periods as defined by the NBER. The hypothetical 50% stock/50% bond portfolio is rebalanced each month. The NBER identifies the following as recessionary periods: November 1926–November 1927; September 1929–March 1933; June 1937–June 1938; March 1945–October 1945; December 1948–October 1949; August 1953–May 1954; September 1957–April 1958; May 1960–February 1961; January 1970–November 1970; December 1973–March 1975; February 1980–July 1980; August 1981–November 1982; August 1990–March 1991; April 2001–November 2001; and January 2008–June 2009. Source: Vanguard calculations using data from the BLS, the NBER, and index returns.

While *average* balanced portfolio returns since 1926 have been similar in and out of recession, the returns for stocks, bonds, and our 50%/50% portfolio have varied greatly in specific recessions. **Figure 2** shows that balanced portfolios have provided positive returns in a surprising number of recessionary periods, in part because equities often have done better during recessions than conventional wisdom would suggest. In fact, the time-varying and somewhat uneven relative performance of stocks and bonds has been observed in periods of expansion, too.

Although the results shown in Figure 1 may seem counterintuitive, the similarity in average real returns occurs largely because of two often-complementary forces at work in a balanced portfolio. First, when a

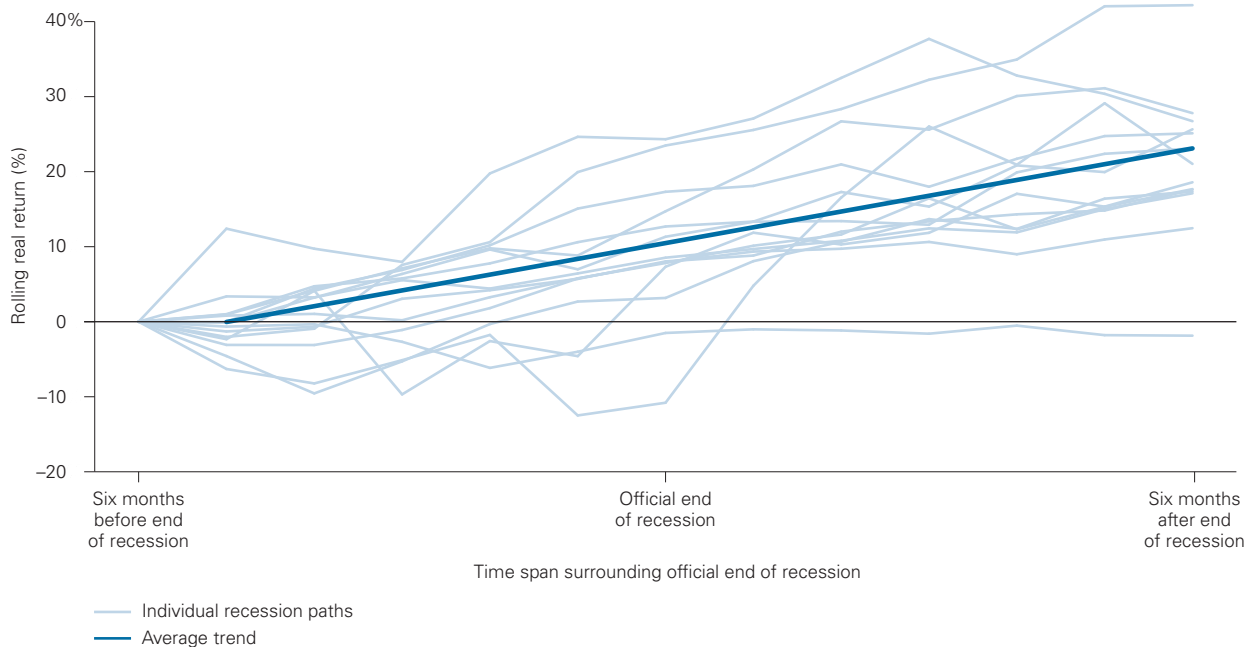
recession is imminent, there is a tendency for bonds to outperform stocks during the initial period of economic weakness (a “flight-to-safety” effect).

Second, as illustrated by the trend line in **Figure 3**, on page 4, stock prices tend to decline before a recession officially begins and to rise before it officially ends (a “leading indicator” effect). For instance, 10 of the 20 highest-returning months for the U.S. stock market since 1926 have occurred during recessions, and 7 of the top 10. In fact, this should not be surprising, because the expected equity risk premium should tend to *rise* during the depths of recessions to compensate stock investors for bearing the higher risk associated with such uncertain macroeconomic conditions.⁴

Notes on risk: All investments are subject to risk. Bond funds contain interest rate risk, the risk of issuer default, and inflation risk. Diversification does not ensure a profit or protect against a loss in a declining market.

⁴ See, for instance, Lustig and Verdelhan (2011).

Figure 3. Rolling real returns for a 50% stock/50% bond portfolio near the ends of recessions since 1926



Note: The 1980 recession is not displayed because it lasted only six months. Real returns were calculated using monthly nominal asset-class returns adjusted for inflation on the basis of monthly CPI data. The hypothetical 50% stock/50% bond portfolio is rebalanced each month. (See page 6 for more information about rolling returns.)

Source: Vanguard calculations using data from the NBER and index returns.

Looking ahead

That a balanced 50%/50% portfolio has produced an average historical real return of approximately 5% during past recessions does not imply that a 5% real return is assured or even reasonable to expect should a recession occur in the near future. Indeed, very deep and long-lasting economic contractions following a run-up in asset prices and leverage—for example, the so-called balance-sheet recessions of the 1930s and 2008–2009—have been associated with lower balanced-portfolio returns, as illustrated in **Figure 4**.

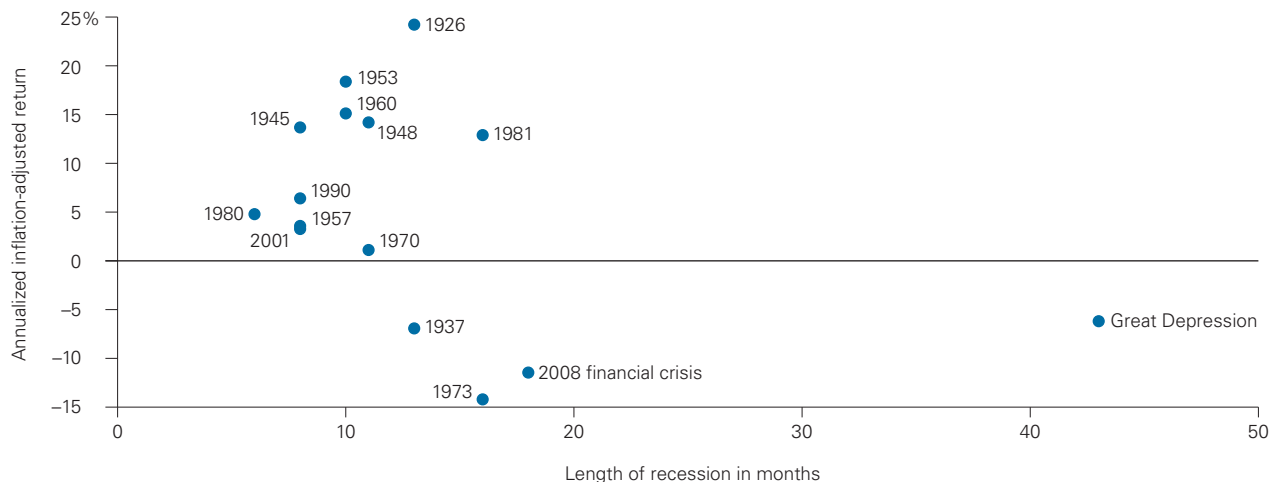
In addition to the depth and length of any recession, two other key metrics are critical in determining the absolute performance of a balanced portfolio during the recessionary period. These are the level of stock valuations (i.e., price/earnings ratios) and the level of interest rates (i.e., Treasury bond yields) heading into the recession. At present, both these measures suggest that the return on a balanced portfolio during any near-future recession may be below the averages shown in **Figure 1**.

Most broad U.S. stock valuation metrics are not currently at extremes. For example, the P/E ratio for the S&P 500 Index stood at 14.5 at the end of August 2011, a more modest valuation than the ratio of 19.0 in December 2007. However, the presently low level of Treasury bond yields suggests that any “flight-to-quality” boost for bond returns in the event of a forthcoming recession may be muted relative to historical averages.

Conclusion

Widespread concern about a potential recession naturally fosters anxiety about the prospect of portfolio declines and tempts some investors to take defensive action. But regardless of the economic environment, it is important for investors to have an asset allocation that matches their risk tolerance and long-run portfolio objective. Changes made in response to headlines and economic projections should be considered very carefully. And while we stress that the 50% stock/50% bond portfolio we chose to assess is not appropriate for all investors,

Figure 4. Real annualized returns versus recession length for a 50% stock/50% bond portfolio



Note: Real returns were calculated using monthly nominal asset-class returns adjusted for inflation on the basis of monthly CPI data. We used the monthly real returns to calculate an annualized geometric return during periods labeled recessionary by the NBER. The hypothetical 50% stock/50% bond portfolio is rebalanced each month. Source: Vanguard calculations using data from the BLS, the NBER, and index returns.

its results illustrate well that balanced and diversified investing has tended to weather past recessions: The portfolio’s returns—both nominal and inflation-adjusted—are not drastically different in recessionary periods than in expansionary periods, in spite of its exposure to stocks.

Recessions are never welcome, of course, and they are often associated with higher return volatility for stocks (and hence for balanced portfolios in general). However, we have shown why the average returns on a balanced portfolio since 1926 have been *statistically equivalent regardless of whether the U.S. economy was in or out of recession*. Indeed, we interpret our results as consistent with the notion that an investment program focused on a diversified, long-term, strategic asset allocation is appropriate regardless of the timing of recessions.

Our results should also give considerable pause to those who recommend a more “tactical” or “defensive” approach to investing. As was shown by earlier Vanguard research—discussed in depth in

Defensive Equity Investing: Appealing Theory, Disappointing Reality (Davis and Philips, 2007)—implementing a defensive investment strategy based on the leading signals of bear markets and recessions (e.g., forward price/earnings ratios, momentum indicators, and the shape of the U.S. Treasury yield curve) would not have achieved better results than following a buy-and-hold strategy.

The obstacles to successfully pursuing real-time defensive portfolio reallocations include the low predictive power of even the best signals of bear markets and recessions, the strategies’ potentially high transaction and tax costs, the inconsistent performance of asset classes over time, the long delay between when recessions begin and when they are confirmed in economic statistics and officially recognized by the NBER, and the often-narrow trading window in which one has to act. Finally, defensive (read, *reactive*) investing comes with a considerable and underappreciated cost—not being strategically invested in the equity market when the bad times end.

Some key terms

Annualized geometric period returns. Calculated by taking the product of all monthly returns in the period, then converting the result to an equivalent annual rate if the period covers more or less than one year.

Rolling returns. The product of all monthly returns from one point in time to another. Rolling returns are not annualized.

Statistical equivalence. Indicates that, based on a statistical test with a defined level of significance (chance of error), two samples or populations were not found to have statistically significant differences (i.e., differences unlikely to occur by chance).

P-value. A measure used in testing whether two samples or populations are statistically different. P-values are combined with a preset significance level (alpha) to determine statistical significance in testing. The lower the p-value (on a 0 to 1 scale), the more likely it is that differences in two samples are statistically significant. For example, if a tester sets an alpha of .05 (5% chance of error) and obtains a p-value of .04, the tester will conclude that there are statistically significant differences in the two samples.

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