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A Shift in Market Mathematics



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Historically, the stock and bond markets have done much better when the labor unemployment rate is above 5% (i.e., above full employment). Indeed, since 1948, annualized stock returns have been nearly twice as strong and long-term government bond returns have been almost four times greater compared to their respective returns when the unemployment rate is at or below 5%. Moreover, both stocks and bonds have tended to suffer more frequent monthly declines in fully employed economies. Finally, on average during the post-war era, once the unemployment rate reaches 5%, a recession has been less than two years away.

Maybe recent stock market struggles will continue or perhaps its impressive rally last week suggests the worst is over. Either way, since the U.S. unemployment rate is about to breach the 5% level, history suggests the mathematics surrounding this stock market are likely to be quite different during the rest of this bull market. This short note offers a couple statistics illustrating just how much the investment climate historically has been altered once the economy has reached full employment.

A 5% labor market and the financial markets

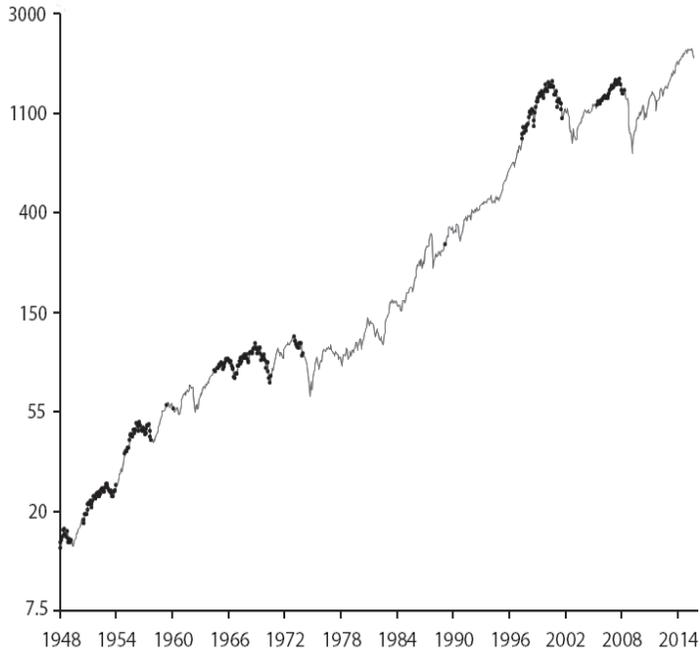
Charts 1 and 2 show the U.S. stock market and the 10-year Treasury bond yield since 1948 highlighting all periods when the unemployment rate was 5% or less. For bonds (Chart 2), once a 5% unemployment rate is breached, historically yields have almost always risen unless a recession results. The most notable exception was during the late 1990s. Although yields did rise between 1998 and 2000 before the recession began, they declined between 1995 and 1998 even though the unemployment rate was below 5%. In our view, yields fell during this period even though the unemployment rate was below 5% because of strong productivity resulting from the tech investment era. Good productivity results can dampen the negative financial market consequences of full employment (which appears to have been the case in the late 1990s), but as shown, even strong productivity gains during the 1950s were not enough to keep yields from rising once the labor unemployment rate breached the 5% level.

As shown in Chart 1, the stock market has often achieved gains even with the unemployment rate below 5%, sometimes sharp gains. However, most significant gains in the stock market once the unemployment rate declines below 5% have been associated with the early stages of a new economic recovery (clearly not where we are in the contemporary recovery). For example, the large gains in 1951 and in 1954-1955 reflected initial jumps in the stock market associated with the end of a recession.

Chart 1

S&P 500 Stock Price Index*

*Natural log scale. Black dots represent all months when the unemployment rate was 5% or less.



Moreover, Chart 3 illustrates the increased risk of recession once a 5% unemployment rate is reached. On average in the post-war era, a recession is less than two years away once a 5% unemployment rate is reached compared to about 4.2 years when the unemployment rate is above 5%. As shown, several of the black dot cycles in Chart 1 simply ended with the stock market and the economy collapsing into a recession. This happened leading up to the 1949, 1954, 1958, 1970, 1975, 2001, and 2008 recessions. Finally, similar to bonds, the stock market did well in the late 1990s even though the unemployment rate was below 5% because of strong productivity gains. Overall, while the stock market has achieved significant gains in fully employed economies, most of these gains occurred just as the economy was emerging from a recession. Outside of these periods, stock market results have proved far more muted.

Simply because the unemployment rate is currently about 5%, this does not imply that the stock market will only go down and bond yields will only rise. However, history does suggest the character of the financial markets is likely to be impacted as the economy nears full employment.

Chart 2

U.S. 10-Year Treasury Bond Yield*

*Natural log scale. Black dots represent all months when the unemployment rate was 5% or less.

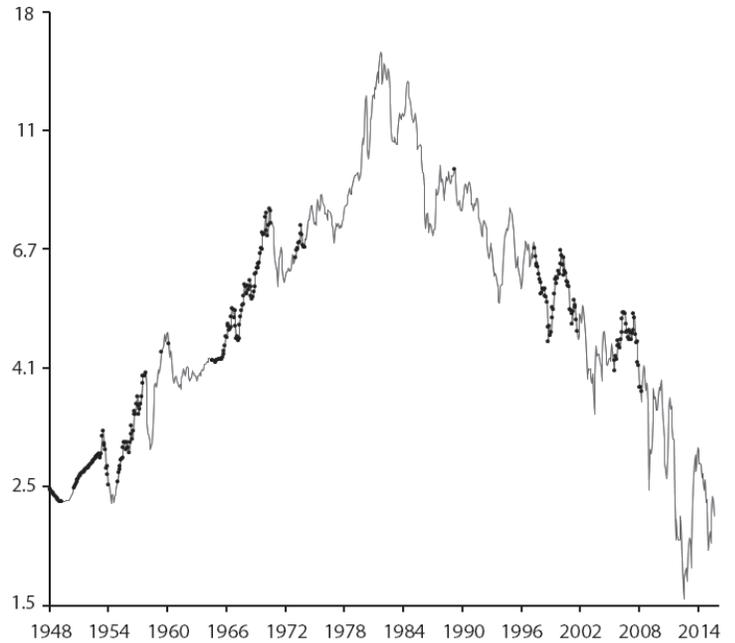


Chart 3

Average number of years until next recovery*

*Based on all economic months since 1948. Calculated as number of months until start of next recession. Calculated both for all months when unemployment rate was above 5% and for all months when unemployment rate was 5.1% or less.

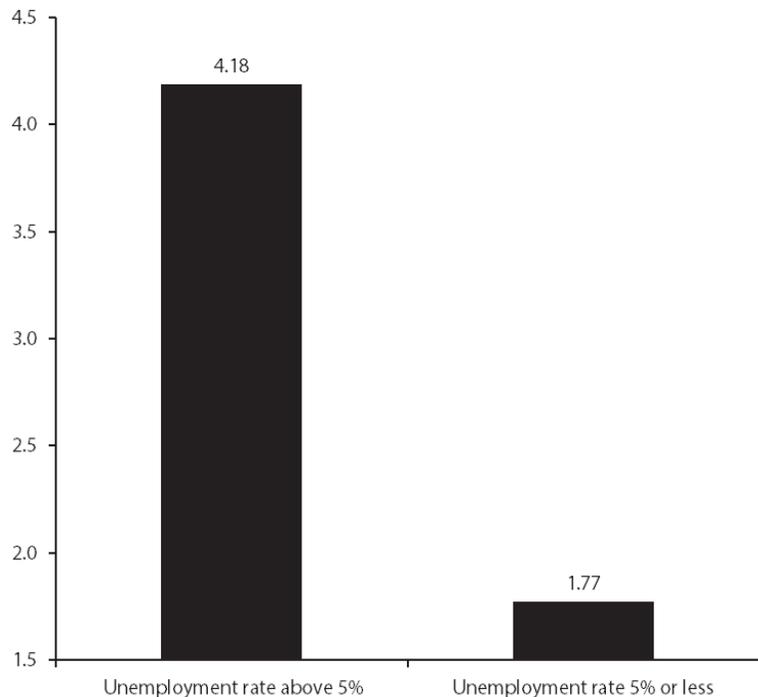


Chart 4

Percent of months when U.S. stock market declines since 1948*

*Note: U.S. unemployment rate has been 5% or less about one third of the time since 1948.

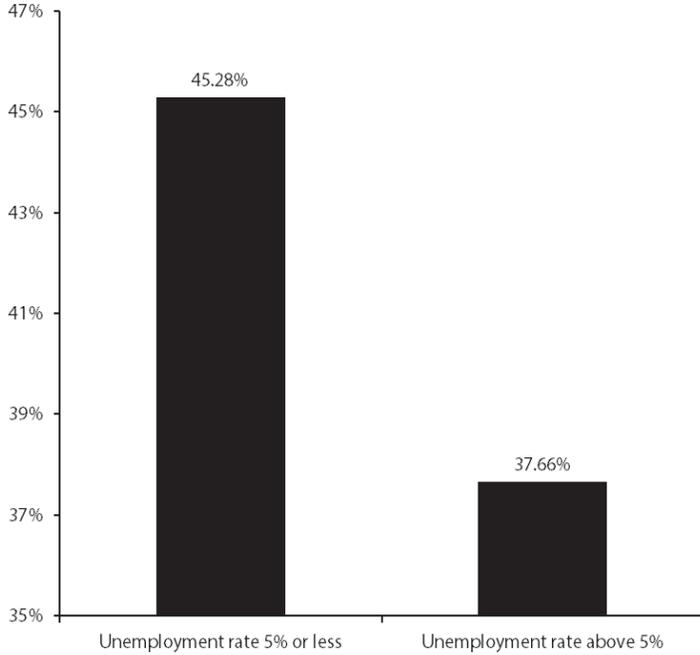
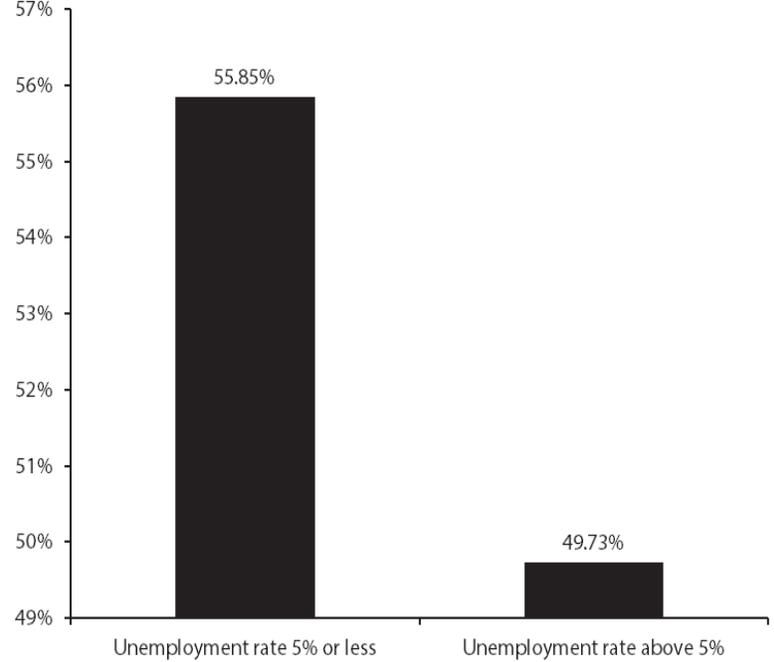


Chart 5

Percent of months when U.S. 10-year bond yield rises since 1948*

*Note: U.S. unemployment rate has been 5% or less about one third of the time since 1948.



A shift in the risk-return frontier

Charts 4, 5, and 6 illustrate how the math facing the financial markets may change in the balance of this bull market now that the economy has reached full employment. Charts 4 and 5 show that the stock market declines more frequently and bond yields more often rise when the unemployment rate is 5% or less compared to when the unemployment rate is above full employment. Since 1948, monthly stock market declines occur about 20% more frequently once the economy reaches full employment (i.e., $45.28\% - 37.66\% = 7.62\%$ which is about 20% higher than the 37.66% of the time the stock market declines when the unemployment rate is above 5%). Similarly, once at full employment, bond yields have risen almost 56% of the time, nearly 12% more than when the economy is away from full employment.

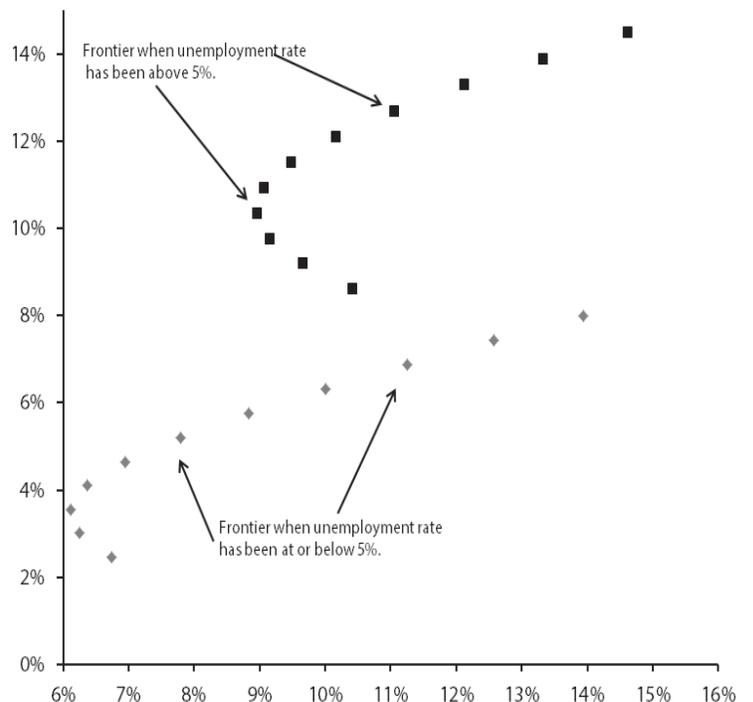
Historically, as Chart 6 shows, the entire financial market risk-return frontier (which relates historic returns and risks associated with all stock-bond portfolios shown in 10% allocation increments) shifts significantly downward at full employment. The large black squares illustrate the annualized stock/bond frontier for all months since 1948 when the unemployment rate was above 5% while the smaller gray triangles illustrate the frontier only for those months when the unemployment rate was 5% or less. Several observations are noteworthy.

Chart 6

Stock/bond risk-return frontiers since 1948

Vertical scale: Annualized total returns (Returns)

Horizontal scale: Annualized standard deviation of total returns (Risk)



First, returns from either an all stock or an all bond portfolio (or any combination thereof) is significantly less once the economy reaches full employment. The stock market has only generated an 8% annualized return once full employment is reached while offering a 14.5% return when the economy is at less than full employment. Similarly, an all bond portfolio has only generated about a 2.5% annualized return at full employment compared to almost an 8.6% return when the unemployment rate is above 5%.

Second, the lower returns offered by financial assets in a fully employed economy also have less volatility. For example, the all stock portfolio offers a much higher return when the unemployment rate is above 5% compared to full employment (i.e., about 14.5% compared to about 8.0%) but this excess return comes with slightly higher risk (i.e., about 14.6% standard deviation of returns compared to only 13.9% deviation in a fully employed recovery). Similarly, bonds have provided investors with an 8.6% return and 10.4% volatility when the economy is less than fully employed while generating only about a 2.5% return but with only about 6.7% volatility after reaching full employment. As shown, every stock-bond portfolio combination offers investors lower returns and lower risk once the unemployment rate reaches 5% or less.

Third, the portfolio diversification offered by combining stocks with bonds is far greater before the economy reaches full employment. In Chart 6, the frontier for unemployment rates above 5% shows that returns are augmented while risk is regularly reduced by moving from an all bond portfolio to a 30% stock and 70% bond portfolio. The comparable minimized

risk portfolio allocation in a fully employed economy is achieved with only a 20% stocks and 80% bonds portfolio. Indeed, with less than full employment, a 65% stock and 35% bond portfolio offers the same risk as an all bond portfolio even though the return is about 4% higher. Once full employment is reached, bond-like volatility is achieved with only a 35% stock and 65% bond portfolio. That is, once the economy reaches full employment, bonds have tended to offer much less risk reduction when added to a stock portfolio.

Fourth, because portfolio diversification is not as effective once the economy reaches full employment, the return per unit of risk (i.e., the slope of the frontier or the additional total return per unit of risk achieved by increasing the allocation toward stocks) has historically risen much faster before the unemployment rate reaches 5%. The black squares in the top frontier tend to rise northward (i.e., better return) faster than eastward (i.e., more risk) as stock allocations are augmented compared to the gray triangles in the lower frontier. The gray triangles tend to move farther eastward and slower northward compared to the black boxes in the upper frontier.

Finally, the degree to which the mathematics surrounding the financial markets is altered by an economy reaching full employment is perhaps best highlighted by the following fact. The all bond portfolio in an economy with an unemployment rate above 5% has yielded investors about 8.6% total annualized returns with only 10.4% risk. By comparison, once full employment is reached in the economy, the all stock portfolio has only produced an 8.0% total return for investors with a much higher risk of about 13.9%!

Summary

The current stock market correction may or may not be over and the contemporary financial market recovery may yet persist several more years. However, as the current economic recovery nears full employment, post-war history suggests investors should prepare for a much more challenging financial market risk and reward environment during the balance of this recovery.

Historically, the statistical or mathematical properties of the financial markets have shifted as the economic recovery nears full employment (i.e., at about the 5% unemployment rate the contemporary recovery has reached). Traditionally, at this point in the recovery, the stock market suffers more frequent declines, bond yields rise more often, average annualized returns from both asset classes are lower, diversification benefits tend to diminish, and recession risk is enhanced.

Thanks for taking a look!!
JWP

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An investment management industry professional since 1983, Jim is nationally recognized for his views on the economy and frequently appears on several CNBC and Bloomberg Television programs, including regular appearances as a guest host on CNBC. *BusinessWeek* named him Top Economic Forecaster, and *BondWeek* twice named him Interest Rate Forecaster of the Year. For more than 30 years, Jim has published his own commentary assessing economic and market trends through his newsletter, *Economic and Market Perspective*, which was named one of "101 Things Every Investor Should Know" by *Money* magazine.

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