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Economic Research Note

Tighter US labor market suggests rising recession risk

- **We assess the historical relationship between business cycle variables and time to next recession**
- **The unemployment rate and gap have been the best indicators that an expansion is nearing its end**
- **Historical data now suggest a 20-40% chance of a recession beginning within two years**
- **But we see reasons to expect this expansion to continue**

The business cycle is often said to follow a predictable pattern. Early in the cycle, rising demand and slack labor markets allow business profit margins to rise. However, as unemployment falls and workers' bargaining power increases, wages begin to rise and profit margins drop back. Eventually, rising wages set off consumer price inflation, prompting the Fed to tighten policy and induce the next recession. Alternatively, after years of steady growth, lenders become complacent and loosen standards, encouraging overborrowing and overinvestment that must eventually reverse.

In practice, however, the business cycle is highly unpredictable, and forecasting recessions with a useful amount of advance warning is very difficult. Nonetheless, the traditional business cycle narrative above certainly contains some truth. In this note, we assess the historical performance of a number of traditional cycle variables in forecasting the amount of time remaining before the next recession hits.

The unemployment gap, measured as the difference between the unemployment rate and the CBO's estimate of its natural rate, has been the single most effective predictor of the time to next recession. The durables investment share of GDP, compensation growth, and profit margins also add some information. With the unemployment rate close to its natural rate, compensation growth picking up, and profit margins down meaningfully from their 2012 peaks, these variables currently suggest as much as a 40% chance of the next recession beginning within two years. Although there are reasons to expect a longer expansion this time around, the historical record suggests we should be increasingly vigilant in looking for early signs of the next recession.

Predicting the unpredictable

The table to the right presents results from a simple forecasting "horserace," where we regress the number of months that elapsed before the next recession on business cycle variables in the sample of NBER expansions. The level of the "unemployment gap," measured as the difference between the unemployment rate and the CBO's estimate of its natural rate (or NAIRU), explains a substantial 36% of the variation in time to next recession in the sample beginning in 1949. The CBO's output gap measure is highly correlated with its unemployment gap and has similar forecasting power.

As these measures of the NAIRU and output gap reflect decades of hindsight, we also note that the raw unemployment rate, which is subject only to modest revisions, has an impressive R-squared of 30% all by itself. Although one might think there is no reason the economy could not continue growing for many years after achieving full employment, the historical record shows that tight labor markets have always presaged

Historical probabilities of recession, by unemployment rate

Source: NBER, BLS, J.P. Morgan

Historical probabilities of recession, by unemployment gap

Source: NBER, BLS, CBO, J.P. Morgan

Horserace of cycle variables in predicting time to next recession

Explanatory variable(s)	R2
Unemployment gap	0.36
Unemployment rate	0.29
Durables and structures share of GDP minus 10-year avg	0.21
Months since last recession end	0.17
Profit margin difference from cycle peak	0.16
Compensation growth (oya) minus 10-year avg	0.14
Core inflation (oya) minus 10-year avg	0.05
Unemployment gap, durables share, profit margins, and compensation	0.46

Source: NBER, BLS, CBO, BEA, J.P. Morgan

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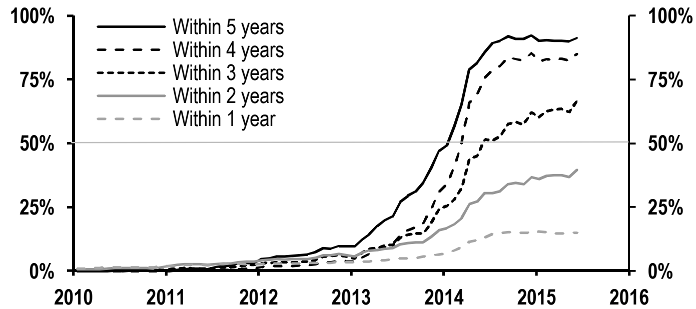
recession in the past. As we wrote recently, past expansions have lasted an average of 3 to 4 years after the labor market has tightened to this point, a result similar to our past work based on the output gap.

The second chart above graphs the probability of the next recession occurring within 1 to 5 years as a function of the unemployment gap. With a current unemployment rate of 5.3% and the J.P. Morgan NAIRU estimate of 5.0%, our estimate of the current unemployment gap is 0.3%. The chart shows that an unemployment gap at this level has been followed by a recession within one year with a probability of 14%, within two years of 28%, and within three years of 44%. Readers with a different view on the level of the NAIRU can use the chart to assess recession probabilities under their preferred estimates, and anyone can use it to assess probabilities under future scenarios. For example, the probability of recession within two to three years rises quite steeply as the unemployment gap moves from 1 to -1. As our forecast looks for unemployment to continue falling, the chart shows that history suggests that recession risk will rise quickly going forward.

The horserace table also contains results for several other potential recession predictors. The share of durables and structures spending as a fraction of GDP (relative to its 10-year average) comes in third with an R2 of 21%. A simple count of the number of months since the last recession ended earns a respectable 17%, slightly better than measures of profit margins and wage growth. Core inflation does relatively poorly as a recession predictor with an R-squared of only 8%. Other variables measuring household and corporate leverage performed even worse, as did consumer and manufacturing sentiment measures. (Our measure of profit margins is the decline in the 4-quarter moving average of nonfinancial corporate net operating surplus as a percent of net value added, relative to its peak in the current cycle. This measure thus takes a value of zero during early-cycle periods when margins are rising, then falls below zero after margins peak. Our measure of compensation is over-year-ago growth in compensation, measured using the employment cost index when it is available and compensation per hour in years, less its ten-year moving average.)

We also combine these variables into a single model. After including the unemployment gap, durables share, profit margins, and compensation variables, the remaining variables add little predictive power, so we omit them. The bottom line of the table shows that these four variables together produce an R-squared of 46%. The last chart shows predicted recession probabilities from this multivariate model at different horizons over the last five years. In 2010, when unemployment was high, compensation growth was subdued, and profit margins were rising, the model predicted the probability of recession was near zero as far as five years out. Recession probabilities have increased as unemployment has fallen, and they rose particularly rapidly in early 2014 as profit margins dropped. Currently, the model sees a 15% probability of a recession beginning within one year, 40% within two years, 67% within three years, and 91% within five years. Note that these figures use the current CBO estimate of the unemployment gap of -0.1%-pt, and are thus higher than predictions using the larger J.P. Morgan estimate above.

Probabilities of recession from multivariate regression model
Probability of recession



Source: NBER, BLS, CBO, BEA, J.P. Morgan

Taking stock

Of course, results like these should be interpreted cautiously for a number of reasons. First, they are based on the 10 US recessions that have begun in years since 1949, a much smaller sample size than one would like. Second, the world may have changed in many ways since past cycles. We place some weight, for example, on the idea that macroeconomic volatility may have permanently downshifted in the last few decades of the "Great Moderation."

We thus tend to think the odds lie with the current expansion continuing for a long time by historical standards. The expansion has lasted 6 years so far, already placing it toward the longer end of the post-war average of about 5-1/2 years. Should it last another 3 or 4 years, which seems quite achievable, it would rank among the two or three longest expansions on record, pre- or post-war. Our forecast indicates that we think the most likely scenario is continued expansion at least through the end of 2016, and a recession is not inevitable even well after that.

Although we see ample reason to think this time could be different, the data presented here still suggest we should be cognizant of the possibility that the risk of recession is rising. We should keep an increasingly watchful eye on the indicators mentioned earlier that have historically signaled a greater risk that the expansion was closer to having run its course.

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