Employment Recession Probability Index

As 2008 begins, many observers believe the U.S. economy will enter a recession. This belief intensified during the latter half of 2007 because of rising oil prices, a weakening housing market, and sluggish job numbers, despite strong quarterly GDP growth. Unfortunately, it is difficult to know with certainty if a recession will happen. But there are new techniques for assessing the probability of a recession that are more timely than the official assessment made by the National Bureau of Economic Research (NBER). This paper reviews the new approach, known as a "recession probability index" and then applies it to key employment numbers.

At a January 15, 2008 hearing of the JEC, former Treasury Secretary Larry Summers said, "a recession is more likely than not. At this point this is or is very close to being a consensus judgment." His remarks echo the sentiment of online trading markets such as intrade.com, where the odds of a recession occurring in 2008 have traded around 70 percent in recent months. A poll by the *Wall Street Journal* finds that economists, on average, now put the chances of a recession at 42.1 percent, the highest in more than three years, and double the risk assessment from a year ago. Officially, recessions are called only in retrospect, often by one or two years. The most recent example is when NBER announced November 2001 as the end of the most recent recessions – but it made this determination a year and a half after the fact.

Professors Marcelle Chauvet and Jim Hamilton recently developed a recession probability index (RPI) ranging between 0 and 100 percent. A simple version of their model uses GDP growth numbers to calculate a ratio of the occurrences a given growth rate has occurred during a recession compared to all such occurrences. Applying this model to employment data, one sees that the unemployment rate rose by 0.23 points, on average, during the 115 months (out of 721 since January 1948) designated as recessions by the NBER. In contrast, it declined by 0.04 during typical expansionary months. Table 1 makes a similar comparison of unemployment rate changes.

Table 1.

Δ Unemployment (1 month)	Probability of Recession
-0.4 or lower	0%
-0.3	2%
-0.2	3%
-0.1	6%
0	5%
0.1	24%
0.2	26%
0.3	46%
0.4 or higher	88%

The 3-month moving sum tells us that a flat rate is very rarely recessionary (see Table 2).

Table 2.

Δ Unemployment (3month sum)	Probability of Recession
-0.1 or lower	2%
0	3%
0.1	8%
0.2	15%
0.3	28%
0.4	42%
0.5 or higher	84%

Evaluating Employment Signals

The next step is to examine if the unemployment rate, or another employment number, signals a useful warning during the onset of a recession, or a "turning point." The series considered include two popular measures of employment growth (payroll jobs and total civilian employment – both reported by the Labor Department), the ratio of employment-to-population, labor force participation rate, jobless claims, and the rate of unemployment. The table below grades each number using an A-F scale.

Table 3. Grade as Pre-recession Indicator

A	Jobless Claims, initial
A	Jobless Claims, continuing
B	Unemployment Rate
C	Employment-Population Ratio
F	Payroll Jobs (payroll survey)
F	Employment (household survey)
F	Labor Force Participation Rate

Historical comparisons show that payroll growth just prior to a turning point is almost indistinguishable from a normal expansion, and this is especially true of original data before revisions. For example, payroll growth during an expansion averaged +173,000 jobs. But net payroll job growth averages +134,000 in the three months before a recession, which is essentially a non-warning. In contrast, the BLS *household* survey of employment growth does slow to zero prior to a recession, and is therefore much better at signaling a slowdown, but is also highly volatile. In sum, neither employment indicator is particularly useful.

In sharp contrast, claims for unemployment insurance (UI) seem to be valuable pre-recession indicators. During the 1-3 months before a recession, initial claims are rising at 51 percent of the recessionary rate; continuing claims are rising at 31 percent. That signal is even stronger during the first three months inside a recession. The unemployment rate also has pre-recession value, but is perhaps prone to false signals due to its volatility. The employment-population ratio offers a useful signal, but with the highest volatility. The labor force participation rate is uninformative for this purpose, and easily the least valuable indicator.

Current Probability of a Recession?

An employment-data RPI was constructed using the two most valuable employment indicators of a recession's early stages: weekly initial unemployment insurance (UI) claims and the unemployment rate. The 4-week moving average of UI claims was reported yesterday at 325,750, which is 17,000 lower than 4 weeks ago and essentially unchanged from the October average. Alone, trends in UI claims suggest a 4.0 percent recession probability. The unemployment rate is 0.1 point lower than December, but 0.1 higher than three months ago, suggesting an 8.0 percent recession probability.

The RPI with the most current data (January 2008) indicates a 6.0 percent chance that the U.S. economy is in recession, sharply down from 35.5 percent last month. The unemployment rate rose to 5.0 in December, a rare 0.3 point change. That signal abruptly changed today when the rate's ascent reversed course slightly, with major implications for the RPI model.

Conclusion

Among the most popular monthly labor measures, the unemployment rate is the most useful as an indicator of recession, whereas two top measures of employment – payroll job growth and CPS employment growth – have little value. Another data series is even more valuable in that respect – claims for unemployment insurance (UI).