

Background Information for the KC Fed's Labor Market Conditions Indicators

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This note provides background information for the construction of the labor market conditions indicators described in "Kansas City Fed's Labor Market Conditions Indicators (LMCI)," published in August 2014 in the Kansas City Fed's *Macro Bulletin*.

The two labor market indicators are constructed as follows:

- The 24 monthly labor market series are collected and transformed as described in the attached table and reference notes. This results in a dataset of monthly data starting in January 1992.
- Perform a principal component analysis on the 24 variables and examine the eigenvalues of the covariance matrix. We focus on the first two components because they account for over 80 percent of the variance across the labor market variables. We then rotate the first two factors using the varimax method with raw loadings. (We do this in Stata, which uses raw loadings by default.)

Variable	Measure	Source	Ref notes
Unemployment rate	percent	BLS	
U6 - Unemployment rate	percent	BLS	1
Work part-time for economic reasons	percent of total household employment	BLS	8
Initial claims for unemployment insurance, state programs	percent of labor force	DOL, BLS	11
Unemployment for 27 weeks and over	percent of unemployed	BLS	
Civilian employment-population ratio	percent	BLS	
Blue Chip forecast of unemployment 4 quarters ahead	percent	Blue Chip	10
Private nonfarm payroll employment	percent change over past 3 months	BLS	
Temporary help services employment	percent change over past 3 months	BLS	
Aggregate weekly hours of production and nonsupervisory employees	percent change over past 3 months	BLS	
Average hourly earnings of production and nonsupervisory employees	percent change over past 3 months	BLS	
Job flows from unemployed to employed	Percent of lagged unemployed	BLS	7
Total private hires rate, JOLTS	percent	BLS	2,3
ISM manufacturing employment index	index	ISM	
Job losers	percent of unemployed	BLS	
Job leavers	percent of unemployed	BLS	
Total private quits rate, JOLTS	percent	BLS	2,3
Challenger-Gray-Christmas announced job cuts	percent of labor force	CGC, BLS	6
NFIB: percent planning to increase employment	percent	NFIB	
NFIB: percent of firms with positions not able to fill right now	percent	NFIB	
Thomson-Reuters/U of Michigan, expected job availability	index	U of Michigan	9
Conference Board, present situation, job availability	index	CB	4
Conference Board, expected job availability	index	CB	5
Labor force participation rate	percent	BLS	

Reference notes (from previous table)

1. The U6 unemployment rate is available starting in 1994. We backcast it to 1992 using the unemployment rate, work part time for economic reasons, and unemployment for 27 weeks and over (measured as listed in table above).
2. We have monthly JOLTS data starting in December 2000. For data prior to December 2000, we use Davis, Faberman, and Haltiwanger (*Journal of Monetary Economics*, 2012) synthetic quarterly JOLTS data from 1990q2 to 2010q2. We convert this quarterly data to a monthly series using a cubic spline interpolation and then splice it to the actual JOLTS series in December 2000.
3. JOLTS data is generally delayed by one month relative to the regular employment reports. We estimate a simple model to forecast JOLTS one-month ahead where each JOLTS series is a function of 4 lags of both JOLTS variables along with current values of job leavers, job losers, and job flows. We use this model to predict period t values of the JOLTS series using lags $(t-1, \dots, t-4)$ of JOLTS and period t values of the other series.
4. CB, present situation, job availability = present situation, jobs plentiful – present situation, jobs hard to get + 100. We add 100 because there are 3 categories (jobs plentiful, jobs not so plentiful, jobs hard to get)
5. CB, expected job availability = expected in 6 months, more jobs – expected in 6 months, fewer jobs. We add 100 because there are 3 categories (expect more jobs, expect fewer jobs, expect same).
6. CGC data are available monthly starting in January 1993. For 1992, they are available for March and June. We use a cubic spline to interpolate data for 1992. This series is then divided by the labor force.
7. Job flows from U to E = flows from unemployed to employed / lagged level of unemployment.
8. Work part-time for economic reasons = $100 * (\text{work part time for economic reasons, all industry, SA, thousands}) / \text{level of household employment}$.
9. Thomson-Reuters/U of Michigan, expected job availability = Expected change in unemployment is less – expected change in unemployment is more.
10. BC, EU in 4 qtr = unemployment rate expected in 4 quarters. Since Blue Chip provides monthly estimates of the unemployment, we use the following scheme:
 - If the Blue Chip month is part of Q1, the unemployment rate is for Q4 (of the current year).
 - If the Blue Chip month is part of Q2, the unemployment rate is for Q1 (of the next year).
 - If the Blue Chip month is part of Q3, the unemployment rate is for Q2 (of the next year).
 - If the Blue Chip month is part of Q4, the unemployment rate is for Q3 (of the next year).
11. For initial claims, the monthly values are monthly averages of prorated seasonally adjusted weeks. We obtain this series from Haver.