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* (since renamed to the *Economic 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 monthly dataset starting in January 1992.

- Researchers at the Kansas City Fed perform a principal component analysis on the 24 variables and examine the eigenvalues of the covariance matrix. They focus on the first two components because they have traditionally accounted for about 80 percent of the variance across the labor market variables. They then rotate the first two factors using the varimax method with raw loadings.

| Variable | Measure | Source | Ref notes |
|---|---|---|---|
| Unemployment rate (U3) | Percent of labor force | BLS | |
| Broad unemployment rate (U6) | Percent of labor force | BLS | 1 |
| Unemployment forecast, four quarters ahead (Blue Chip) | Percent of labor force | Blue Chip | 2 |
| Job flows from unemployed to employed | Percent of lagged unemployed | BLS | 3 |
| Quits rate, total private, JOLTS | Percent of employed | BLS | 4,5 |
| Employment-to-population ratio | Percent of population age 16 and older | BLS | |
| Working part time for economic reasons | Percent of employed | BLS | |
| Job leavers | Percent of unemployed | BLS | |
| Job availability index (Conference Board) | Index | CB | 6 |
| Unemployed 27 or more weeks | Percent of unemployed | BLS | |
| Percent of firms with positions not able to fill right now (NFIB) | Percent | NFIB | |
| Job losers | Percent of unemployed | BLS | |
| Hires rate, total private, JOLTS | Percent of employed | BLS | 4,5 |
| Percent of firms planning to increase employment (NFIB) | Percent | NFIB | |
| Average hourly earnings of production and nonsupervisory employees, total private | Percent change over past three months | BLS | |
| Initial claims for unemployment insurance, state programs | Percent of labor force | DOL, BLS | 7 |
| Private nonfarm payroll employment | Percent change over past three months | BLS | |
| Aggregate weekly hours of production and nonsupervisory employees, total private | Percent change over past three months | BLS | |
| Temporary help services employment | Percent change over past three months | BLS | |
| Expected job availability (U of Michigan) | Index | U of Michigan | 8 |
| Labor force participation rate | Percent of population age 16 and older | BLS | |
| Manufacturing employment index (ISM) | Index | ISM | |
| Announced job cuts (Challenger-Gray-Christmas) | Percent of labor force | CGC, BLS | 9 |
| Expected job availability (Conference Board) | Index | CB | 10 |

All data series are accessed through Haver Analytics except data from the Conference Board.

Reference notes (from previous table)
1. The U6 unemployment rate is available starting in 1994. The rate is backcast to 1992 using the unemployment rate, the percent of employed who are working part time for economic reasons, and the percent of the unemployed who have been unemployed 27 or more weeks (measured as listed in the table above).
2. The four-quarter-ahead forecast is generated using Blue Chip monthly estimates of their quarterly unemployment rate forecast under the following scheme:
   - If the month of the Blue Chip forecast is part of Q1, the unemployment rate forecast pulled is for Q4 (of the current year).
   - If the month of the Blue Chip forecast is part of Q2, the unemployment rate forecast pulled is for Q1 (of the next year).
   - If the month of the Blue Chip forecast is part of Q3, the unemployment rate forecast pulled is for Q2 (of the next year).
   - If the month of the Blue Chip forecast is part of Q4, the unemployment rate forecast pulled is for Q3 (of the next year).
3. Job flows from U to E = flows from unemployed to employed / lagged level of unemployment
4. Monthly JOLTS data are only available starting in December 2000. However, Davis, Faberman, and Haltiwanger (*Journal of Monetary Economics*, 2012) provide synthetic quarterly JOLTS data 1990:Q2 through 2010:Q4. These quarterly data are converted to monthly series using a cubic spline interpolation and then spliced to the actual JOLTS series in December 2000.
5. JOLTS data are generally delayed by one month relative to the regular employment reports. To forecast JOLTS data for the current month, the current month is set to be equal to the last month for which JOLTS data are available. For example, if researchers are calculating the LMCI for May and do not have May JOLTS data, they set the May JOLTS readings equal to the April JOLTS readings.
6. Conference Board job availability is calculated as the percent of respondents who think jobs are currently plentiful minus the percent of respondents who think jobs are currently hard to get plus 100. The addition of 100 sets the baseline value of the index to 100 and is arbitrary.
7. For initial claims, the monthly values are monthly averages of prorated seasonally adjusted weeks.
8. University of Michigan expected job availability is calculated as the percent of respondents who expect unemployment to decrease minus the percent of respondents who expect unemployment to increase. The baseline value of the index is 0 and is arbitrary.
9. CGC data are available monthly starting in January 1993. For 1992, they are available for March and June. A cubic spline is used to interpolate data for 1992. This series is then divided by the labor force and multiplied by 100 to calculate job cuts as a percent of the labor force.
10. Conference Board expected job availability is calculated as the percent of respondents who expect there to be more jobs in six months minus the percent of respondents who expect there to be fewer jobs in six months plus 100. The addition of 100 sets the baseline value of the index to 100 and is arbitrary.