

Technical Appendix: Gauging the Momentum of the Labor Recovery

This appendix provides technical details for “Gauging the Momentum of the Labor Recovery,” by Mary C. Daly, Bart Hobijn, and Benjamin Bradshaw, *FRBSF Economic Letter* 2013-30, October 15, 2013.
<http://www.frbsf.org/economic-research/publications/economic-letter/2013/october/labor-market-recovery-momentum-indicators/>

Methodology

We use 30 indicators, indexed by $j = 1, \dots, 30$. The level of indicator j in month t is given by x_{jt} . The main headline number is the unemployment rate, i.e. $j = 1$.

Slack measures

For the slack measures we define the normalized level of the indicators by

$$(1) \quad z_{jt} = \frac{x_{jt} - \bar{x}_j}{S_j},$$

where, \bar{x}_j , is the sample mean of x_{jt} and S_j is its sample standard deviation. The correlations are computed as follows: “6-month lead” correlations are $\text{corr}(z_{1t}, z_{jt-6})$, etc.

Momentum measures

For the momentum measures define the normalized 6-month change of the indicators by

$$(2) \quad m_{jt} = \frac{\Delta_6 x_{jt} - \overline{\Delta_6 x_j}}{S_{\Delta_6, j}},$$

where $\Delta_6 x_{jt}$ is the 6-month change in the indicator, $\overline{\Delta_6 x_j}$ is the sample mean of $\Delta_6 x_{jt}$, and $S_{\Delta_6, j}$ is its sample standard deviation. In Table 1 under the correlations heading, the “current” column is computed as $\text{corr}(m_{1t}, m_{jt})$ while the “6-month lead” column is computed as $\text{corr}(m_{1t}, m_{jt-6})$. Under the “Value” heading in Table 1, the first column lists m_{jt-12} and the second value column lists m_{jt} , with t being the most recent month for which we have data.

Table A1. List of indicators used in analysis

no.	Indicator	Description
1	Unemployment rate	Fraction of labor force unemployed (SA,percent)
2	Payroll employment	6-month average of change in Total Nonfarm Payrolls (SA, Thous)
3	Employment to population gap	Employment to population ratio in deviation from trend
4	Jobs gap	Jobs gap (Conference Board)
5	Capacity utilization	Capacity utilization, total industry
6	Output gap	Percentage point deviation of monthly GDP (MA) from potential GDP (BoG)
7	Job openings rate	JOLTS: Job Openings Rate: Total (SA, %)
8	Job openings hard to fill	Percent of firms with at least one "hard to fill" opening (NFIB,SA)
9	ISM Composite Index	ISM Composite Index (SA, >50=Increasing)
10	ISM Manufacturing Index	ISM Manufacturing: PMI Composite Index (SA, 50+=Increasing)
11	ISM Manufacturing: Employment Index	ISM Manufacturing: Employment Index (SA, 50+=Increasing)
12	ISM: Nonmanufacturing: Employment Index	ISM: Nonmanufacturing: Employment Index (SA, 50+=Increasing)
13	NFIB Firms expanding employment next 3 months (net %)	Net percent of firms planning to expand employment in the next 3 months (SA)
14	NFIB Businesses w/ Increase in Employment in Last 3 Months	NFIB: Businesses with Increase in Employment in Last 3 Months, Net (SA, %)
15	CB Labor market expectations - fewer jobs	Survey - Conference Board - Consumer Confidence - Expectations for six months hence - Employment - Fewer jobs
16	CB Labor market expectations - more jobs	Survey - Conference Board - Consumer Confidence - Expectations for six months hence - Employment - More jobs
17	Initial Claims	Initial Claims for Unemployment Insurance, State Programs, Wkly Avg (SA, Thous)
18	Continuing claims	All Programs Continuing Claims: Reg, UCFE, UCX, EUC, EB, SAB, STC (NSA, Number) - Seasonal Adjustment, All
19	Insured unemployment rate	Insured Unemployment as Percent of Covered Employment (SA, %)
20	Quits rate	JOLTS: Quits: Total (SA, Thous)
21	Job finding rate (Shimer)	Job finding rate (Shimer 2005)
22	Hires rate	Hires as a percentage of employed (SA)
23	Private payroll employment	6-month average of change Total Private (SA, Thous)
24	Temp help employment	6-month average of change in Temporary Help Services Payrolls (SA, Thous)
25	Average weekly hours	Average Weekly Hours: Total Private Industries
26	Average Hourly Earnings	Avg Hourly Earnings: Prod & Nonsupervisory: Total Private Industries(SA, \$/Hour) 12-qtr % Change
27	Household employment	Monthly change in civilian employment (SA, Thous)
28	Part time econ reasons (% of emp)	Employed: Part-Time/Economic Reasons: All Industries (SA, Thous) / Civilian Employment (SA, Thous)
29	Long-term unemployment	Unemployed for 27 weeks and over, as a percentage of unemployed (SA, %)
30	Labor force participation rate	Labor force participation gap