I. Labor and Living Standards

Per capita GDP and its growth depend on:

- Productivity (output per worker)

- The employment-population ratio
  - Employed proportion of the labor force (demand)
  - Labor force participation rate (supply)

- The proportion of the total population aged 16 or older, not in the military, and not institutionalized (demographics and immigration)
The key relationship written out

\[
\frac{Q}{P_t} = \left( \frac{Q}{E} \right) \cdot \left( \frac{E}{P_w} \right) \cdot \left( \frac{P_w}{P_t} \right)
\]

Per capita GDP  Worker productivity  Employment-population ratio  Civilian LF proportion

- Per capita GDP is our best measure of living standards
- Output (Q) per employed worker (E) is a good measure of productivity
- The employment-population ratio is an overall measure of labor market health
- The civilian labor force proportion is the proportion of the total population (P_t) that is aged 16 or more, not in the military, and not institutionalized (P_w)

The employment-population ratio can be decomposed

\[
\frac{E}{P_w} = \frac{E}{LF} \cdot \frac{LF}{P_w}
\]

Employment-population ratio  Employed proportion of labor force  Labor force participation rate

- These are the central element of labor market health
2. Importance of the Labor Market

How tight is the labor market?

- Matters due to implications for earnings and Federal Reserve policy (among other things)
- Unemployment rate and vacancy data suggest tightness
- But other key indicators — employment/population ratio, labor force participation rate — suggest slack

Labor force concepts and statistics for April 2017

- Civilian Labor Force = E + UE = 160.2 million
- Employed (E) 153.2 million
- Unemployed (UE) 7.1 million
- Not in the Labor Force (NLF) 94.4 million — includes 1.5 million "marginally attached" and 0.5 million "discouraged"
- Civilian Noninstitutional Population 254.6 million
- Total Population 325 million (est.)
The unemployment rate and vacancy data suggest the labor market is healthy (a tight labor market)

**Unemployment rate (U-3, seasonally adjusted), 2000–present**

![Graph of unemployment rate from 2000 to 2016](image)

*Source: Data from U.S. Bureau of Labor Statistics; graph from FRED (Federal Reserve Economics Data, Federal Reserve Bank of St. Louis)*

- The official unemployment rate (U-3) suggests the labor market is at full employment — we are back where we were before the Great Recession

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**Unemployment rate (U-3, seasonally adjusted), 1948–present**

![Graph of unemployment rate from 1948 to 2016](image)

*Source: Data from U.S. Bureau of Labor Statistics; graph from FRED (Federal Reserve Economics Data, Federal Reserve Bank of St. Louis)*

- Taking a longer view, the evidence seems even stronger
Broadened unemployment rate (U-6): Unemployed, plus marginally attached, plus employed part-time for economic reasons, as percent of the CLF plus all marginally attached workers, 1994–present

Source: Data from U.S. Bureau of Labor Statistics; graph from FRED (Federal Reserve Economics Data, Federal Reserve Bank of St. Louis)

- The broader U-6 is only slightly less positive — within 1 point of where it was before the Great Recession and within 2 points of its lowest-ever level

Michigan unemployment rate (U-3, seasonally adjusted), 2000–present

Source: Data from U.S. Bureau of Labor Statistics; graph from FRED (Federal Reserve Economics Data, Federal Reserve Bank of St. Louis)

- The story is slightly less positive for the official Michigan unemployment rate ...
**Michigan U-6**: Total unemployed, plus all marginally attached workers, plus total employed part-time for economic reasons, as percent of the CLF plus all marginally attached workers, 2003–present

![Graph showing Michigan U-6 unemployment rate]

Source: Data from U.S. Bureau of Labor Statistics; graph from FRED (Federal Reserve Economics Data, Federal Reserve Bank of St. Louis)

- But slightly more positive for the broadened Michigan unemployment rate (U-6)

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**Average Weekly Hours of Production and Nonsupervisory Employees: Total Private**

![Graph showing average weekly hours]

Source: Data from U.S. Bureau of Labor Statistics; graph from FRED (Federal Reserve Economics Data, Federal Reserve Bank of St. Louis)

- Average weekly hours have also nearly returned to their pre-recession level
Number of unemployed persons per job opening (seasonally adjusted), 2002–present


- Number of unemployed persons per job opening was as low as it has ever been

But other indicators suggest a less healthy labor market

Some economists still believe the labor market has some slack

- The employment population ratio has not recovered
- The labor force has been falling
- The Beveridge Curve has shifted out dramatically
Employment-population ratio (seasonally adjusted), 2005–present

Source: Data from U.S. Bureau of Labor Statistics; graph from FRED (Federal Reserve Economics Data, Federal Reserve Bank of St. Louis)

Civilian labor force participation rate (seasonally adjusted), 1978–present

Source: Data from U.S. Bureau of Labor Statistics; graph from FRED (Federal Reserve Economics Data, Federal Reserve Bank of St. Louis)

- Only about half the decline since 2008 can be attributed to changing demographics (like the aging of the labor force)
Unemployment rate with two demographic adjustments

- Further dissent comes from economists who believe a more reliable picture of labor market tightness requires adjustments for demographic changes.

The Beveridge curve: Job openings rate and the unemployment rate (seasonally adjusted), 2000–present

Notes on the Beveridge curve

- The vacancy rate and the unemployment rate vary systematically over the business cycle — when the unemployment rate is high, employers have fewer vacancies.

- Where the curve lies depends on several factors.

- The most common interpretation is that, the farther the curve is from the origin, the less efficient the labor market — matching between workers and vacancies could be worse if workers’ skills and the available jobs were mismatched, or if unemployed workers were in different locations than vacancies.

- But there are other interpretations (see below).

3. Has the Structure of the Labor Market Changed?

Two key pieces of evidence suggest it has

- The labor force has been shrinking more than can be explained by demographic change.

- The Beveridge Curve has shifted out dramatically.

Why?
The shrinking labor force

- One main possibility: Long-term effects of the Great Recession due to long-term unemployment

- Alan Krueger (among others) has shown that many of the long-term unemployed never returned to the labor force

Of total unemployed, percent unemployed $\geq 27$ weeks (seasonally adjusted), 1948–2015

Source: Data from U.S. Bureau of Labor Statistics; graph from FRED (Federal Reserve Economics Data, Federal Reserve Bank of St. Louis)
What about the Beveridge Curve?

- The reason(s) for the outward shift of the Beveridge Curve are even less clear
  - Has the labor market become less efficient?
  - Have employers been having trouble replacing aging baby-boomers with younger workers?
  - Has the behavior of employers in posting vacancies may have changed? Are they now more selective in hiring? (Steven Davis and John Haltiwanger)
  - When (if) the Beveridge Curve snaps back to its earlier path, we may know more, but the outward shift suggests “something” fundamental or structural has changed

4. Productivity Stagnation?

\[
\frac{Q}{P_t} = \frac{O}{E} \cdot \left( \frac{E}{LF} \right) \cdot \left( \frac{P_w}{P_t} \right)
\]

- Per capita GDP
- Worker productivity
- Employed proportion of labor force
- Labor force participation rate
- Civilian LF proportion

What about productivity?
**Total factor productivity (constant prices), 1950–present**

Source: Data from U.S. Bureau of Labor Statistics; graph from FRED (Federal Reserve Economics Data, Federal Reserve Bank of St. Louis)

- 1948–1972: Fairly steady productivity growth
- 1972–1983: Weak productivity growth (with declines in some years)
- 1995–2004: Brief productivity “burst”
- 2004–present: Substandard productivity growth (decline in 2007 and below normal since — on the order of 0.5 percent or less annually)

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**Why the slow growth of productivity in the aftermath of the Great Recession?**

Robert Hall has attributed the decline mainly to three factors:

- A depleted stock of physical capital (low investment since the Great Recession)
- Slower technological change (possibly due in part to the recession)
- Reduced human capital per worker (replacement of the Baby Boomer with younger workers)
One last time

\[
\frac{Q}{P_t} = \left(\frac{Q}{E}\right) \cdot \left(\frac{E}{LF}\right) \cdot \left(\frac{LF}{P_t}\right) \cdot \frac{P_w}{P_t}
\]

- Weak productivity growth
- Falling labor force participation (and other forms of structural change in the labor market)
- Possibly sluggish growth of demand for labor
- All raise concerns about long-term growth, with the labor market playing an significant (unfortunately negative) role

Appendix: A note on the unemployment rate

To a first (VERY rough) approximation, we could simply be in a lower-employment, lower-wage equilibrium — so the unemployment rate may not get us very far in thinking about the health of the labor market.