



Economic Letter

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Labor Market Not Overly Tight, Demographically Adjusted Measure Shows

by Carlos E. Zarazaga and Emil Mihaylov

► **ABSTRACT:** Elevated inflation traditionally accompanies prolonged low unemployment rates, such as those currently observed in the U.S. However, price pressures have remained comparatively restrained, prompting further examination. The labor input utilization rate—the proportion of total hours individuals devote to work—provides insight when demographically adjusted, particularly when accounting for aging baby boomers. The indicator suggests the labor market wasn't overly tight in second half 2018.

There is something unusual about the U.S. economy. The unemployment rate has remained near 4 percent in the 12 months through October. Meanwhile, year-over-year inflation has stood near the Federal Reserve's 2 percent annual target rate.

That is disconcerting because, in the past, such relatively low U.S. unemployment has been commonly associated with inflation rates well above target, prompting policymakers to adopt appropriate monetary policy actions to fulfill the Fed's mandate of maintaining price stability.¹

This seeming oddity begs the question of whether the unemployment rate remains a reliable gauge of labor market conditions. Consistent with such a notion is the argument that the Great Recession intensified a known problem of the indicator—by construction, the unemployment rate does not count unemployed individuals who, disenchanted by their poor job prospects, stop looking for work.

Thus, accurately gauging labor market conditions may require complementary measures. One such measure is the labor input utilization rate (LIUR).

Balanced-Growth Labor Input

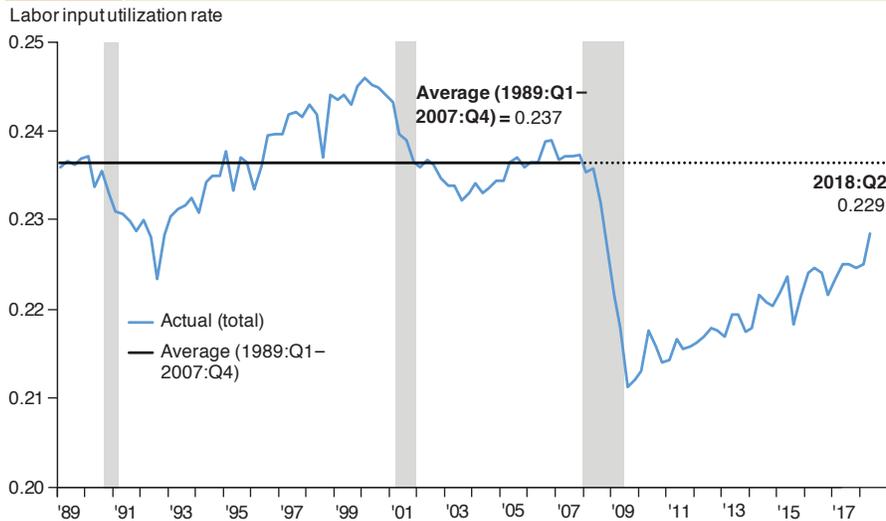
Conceptually, the LIUR is the measure of labor input adopted in balanced-growth theory and inspired by evidence suggesting that, in many economies, key macroeconomic variables have grown at a common rate for long periods. One of the most intriguing features of that evidence is that the resulting secular rising trend in the average real wage has typically failed to induce any noticeable trend in the share of available time that the working-age population devotes to work.²

The share of available time devoted to work is the LIUR, calculated as the total number of hours that the working-age population (16 years of age and older) was actually at work relative to discretionary hours—100 hours a week on average per working-age individual—that that population could have devoted to work.³ The numerator—hours at work—excludes hours paid while on vacation or on various leaves that do not contribute any labor input to the production process.

LIUR can be interpreted as a measure of the proportion of the working-age population's "capacity" to work actually used as a

CHART 1

Labor Input Utilization Rate Drops After Great Recession



NOTE: Shaded areas denote National Bureau of Economic Research-defined recessions.

SOURCES: IPUMS-CPS; authors' calculations.

TABLE 1

Share of Working-Age Population Reaching Retirement Age Grows Significantly Since Great Recession

Year	Age (%)				
	16 to 19	20 to 24	25 to 54	55 to 64	65 and older
1957	7.67	8.45	57.95	13.12	12.81
1967	10.38	10.33	52.07	13.33	13.88
1977	10.49	12.31	50.06	12.93	14.21
1987	7.99	10.38	54.30	11.95	15.38
1997	7.56	8.59	57.52	10.59	15.75
2007	7.32	8.81	54.21	14.03	15.62
2017	6.57	8.39	49.28	16.34	19.42

SOURCE: Census Bureau.

labor input. It is analogous, therefore, to the more familiar industrial capacity utilization rate.⁴

Diminished U.S. Labor Utilization

LIUR's evolution as a labor market indicator in the U.S. becomes apparent over time (*Chart 1*).

Before the Great Recession, the LIUR didn't display any clear tendency to

increase or decrease, a characteristic that balanced-growth theory has been able to replicate in model economies with a stable demographic structure.

The average LIUR before the Great Recession is often identified as the long-run trend of this indicator. The projection of that trend to the subsequent period would suggest that almost a decade after the Great Recession, the aggregate LIUR remained

3.4 percent below trend, a large gap by historical standards.

A difficulty with such a pessimistic assessment is that the balanced-growth assumption that would justify it, an unchanged demographic structure, does not apply to the U.S. owing to the disproportionately large cohorts born roughly in the decade that followed the end of World War II.

By coincidence, these generations of so-called "baby boomers" began reaching retirement age just as the Great Recession was unfolding, significantly tilting the U.S. demographic composition over the past decade in favor of the population age 65 years and older (*Table 1*).

This is key to inferring the trend of the LIUR, because individuals in retirement allocate much less of their available time to work than most other age groups. Without considering this demographic change, it follows that the decline of the observed LIUR from its underlying trend since the Great Recession might be severely overestimated.

Correcting Measurement Bias

Algebraically, the trend of the overall LIUR is a weighted average of the LIURs specific to various age and gender groups. Accordingly, the trend of the aggregate LIUR can be inferred by adding up the trends of the LIURs of those demographic groups, weighted by their share of the working-age population. Changes in those shares will induce shifts in the trend of the overall LIUR relative to that obtained with an invariant demographic composition.

Thus, a natural first step for inferring a demographically adjusted trend for the aggregate LIUR is assigning working-age individuals to demographic groups deliberately selected to capture the impact of the aging baby boom generation.

To that end, the working-age population is divided by gender into the following age brackets: 16–19, 20–24, 25–54, 55–61, 62, 63, 64, 65, 66, 67, 68, 69, 70, and 71 and older.

Individuals 62 to 70 years old are separated into single-age categories because, owing to the structure of retirement benefits, those specific LIURs decline significantly faster with each additional year of age relative to other age brackets. The weighted average procedure captures this dynamic and thus provides a more accurate

assessment of the overall LIUR trend.

Estimating the trend of the LIURs specific to each gender and age-specific group comes next. For simplicity, the quarterly LIUR for each gender and age group is regressed on a time index that registers the magnitude of the average change of the LIUR from one period to the next, using the data from the last quarter of 1989 to fourth quarter 2007.⁵

The process excludes observations after the Great Recession. This avoids contaminating the structural factors captured by the trend with cyclical effects attributable to the severe downturn. Resulting linear trends for representative subsets of demographic groups are compared with the actual value of the corresponding LIUR (Chart 2).⁶

Finally, each demographic group's share of the entire working-age population in each quarter is multiplied by the trend LIUR value specific to that demographic group. The resulting products are added to obtain the weighted average of the LIUR for the whole working-age population (Chart 3).

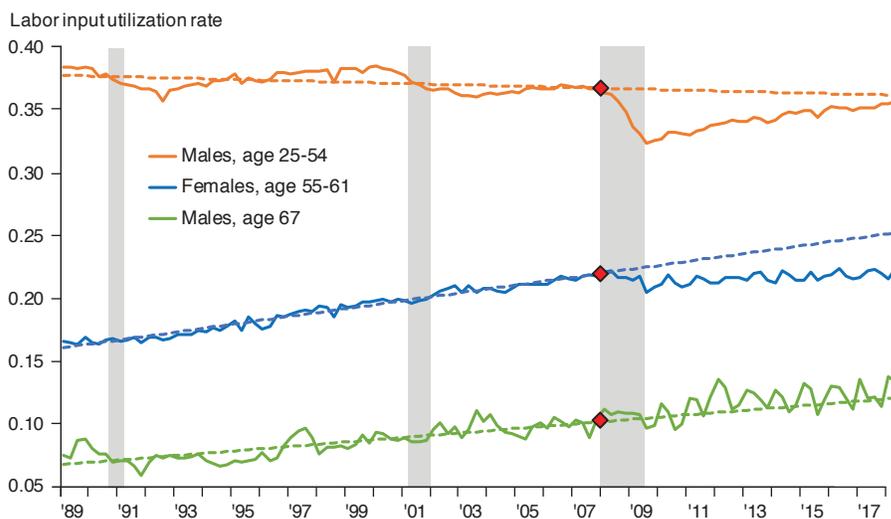
The demographically adjusted trend for the LIUR (green line) shows some meaningful departures from the unadjusted trend line, plotted in Chart 1 and again in Chart 3. The different depiction of the period after the Great Recession, bent down by the demographic gravity exerted by retiring baby boomers, is particularly notable. Thus, actual LIUR was only 1.5 percent below the demographically adjusted trend by second quarter 2018—less than half the gap noted earlier with respect to the completely flat trend from an unchanged demographic composition.

Effects of Delayed Retirement

It is important to emphasize that the adjusted LIUR gap is the product of two opposing forces involving baby boomers, who increasingly make up the older age groups. There is the downward pressure of retirements and the counter-baby-boom tendency to devote a rising fraction of time to work. The LIUR for 67-year-old men illustrates the latter force.

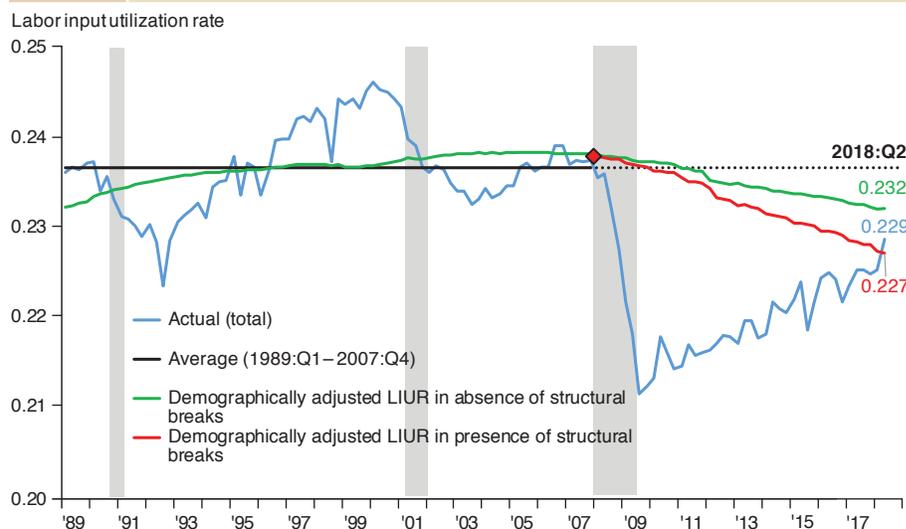
At the same time, the weighted average procedure for inferring the aggregate LIUR relies heavily on projecting into the future the linear trends prevailing for each demographic group between 1989 and 2007. Such a projection might not hold up.

CHART 2 Trend, Actual LIUR Highlight Demographic Influences



NOTES: Shaded areas denote National Bureau of Economic Research-defined recessions. Demographic groups' trends are noted with dashed lines. Diamond denotes trend value as of 2007.
SOURCES: IPUMS-CPS; authors' calculations.

CHART 3 Demographically Adjusted LIUR Falls Below Unadjusted Depiction



NOTES: Shaded areas denote National Bureau of Economic Research-defined recessions. Structural breaks refer to the possibility that the time trends of the LIURs specific to each demographic group prevailing before the Great Recession didn't continue after it and stalled at the corresponding fourth quarter 2007 value. Diamond denotes trend value as of 2007.
SOURCES: IPUMS-CPS; authors' calculations.

Consider the LIUR for females between 55 and 61 years old also depicted in Chart 2. It appears to have experienced a structural break following the Great Recession, although not necessarily because of it.

Accounting for Structural Breaks

Screening out the impact of structural breaks on LIUR provides additional insight. This is possible by repeating the weighted average procedure but fixing the values of the trends of the LIURs specific to each

demographic group to those corresponding to fourth quarter 2007, as noted by the diamond symbols in Chart 2.

By construction, the resulting trend is the same as the demographically adjusted one obtained earlier through fourth quarter 2007; it then departs along the red line in Chart 3. It shows that the gap between the actual LIUR and the “structural breaks version” of its demographically adjusted trend entirely closed by second quarter 2018.

Less Labor Market Tightness

Historically, unusually low unemployment rates have been associated with high inflation rates, inconsistent with the Federal Reserve’s price stability mandate. Thus, the current coexistence of near-record-low unemployment rates with inflation rates compatible with the mandate has been a source of consternation in academic and policy forums.

The puzzle disappears, however, if the LIUR measure proposed by balanced-

growth theory replaces the unemployment rate typically used to assess labor market slack. Two demographically adjusted versions of LIUR indicate that U.S. labor market conditions were not overly tight in second quarter 2018, an assessment in line with the on-target inflation rates observed.

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Notes

¹ Specifically, the Federal Reserve has a dual mandate of maximum sustainable employment and price stability.

² A good summary of those regularities is in “Resuscitating Real Business Cycles,” by Robert G. King and Sergio T. Rebelo, *Handbook of Macroeconomics*, 1999, pp. 927–1007.

³ This number of hours of time available to work per week for each member of the working-age population has been conventionally adopted in the literature by rounding up the figures documented in “Response to a Skeptic,” by Edward

C. Prescott, Federal Reserve Bank of Minneapolis *Quarterly Review*, Fall 1986.

⁴ Notice also that, by construction, the labor input utilization rate (LIUR) overcomes one of the limitations of another commonly used labor market indicator, the employment/working-age population ratio, which measures the number of workers on payroll, regardless of the number of hours they are at work. This alternative indicator could provide the false impression of a tighter labor market in circumstances in which two or more part-time workers have replaced several full-time workers, even if the total number of hours worked remained unchanged.

⁵ Data are from the Current Population Data for Social, Economic, and Health Research maintained by the Integrated Public Use Microdata Series (IPUMS-USA) project, <https://usa.ipums.org/usa/>.

⁶ In Chart 2, depiction of the LIUR specific to prime-age (25 to 54 years old) males remaining below its projected trend in second quarter 2018 suggests that the unemployment rate missed the “disenchanted workforce” effect.

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