

U.S. Economics Weekly: Market and Policy Comments

Fed's Employment Mandate: Cyclical and Structural Forces Clash

- Chair Yellen has shaped Fed policy assuming that there is substantial economic slack that can be reduced with a more robust recovery. The key policy question is whether the Fed's near-term focus on unemployment risks dislodging inflation expectations.
- The distribution of risks associated with the current Fed policy stance has "fat tails," with outcomes dependent on the relative share of cyclical and structural forces at work in the labor market.
- If unemployment were mainly cyclical, our estimates of Okun's Law imply that Chair Yellen's goal of lowering the unemployment rate to the natural rate would require maintaining GDP growth at approximately 3½ percent for two years. Unfortunately there is compelling evidence that the employment gains from faster GDP growth likely will be unevenly distributed across different gender and demographic groups.
- In light of the heated debate about the recent accelerated drop in the labor force, we propose a new top-down decomposition to estimate the cyclical and structural components of the decline. We find that the majority of the recent decline is likely structural, consistent with those who emphasize the effects of demographics, hysteresis of the long-term unemployed and policy-driven disincentives to work.
- These results indicate that a great number of workers on the margins of the labor force may be slow to reenter (if at all). Moreover, they may not constitute a substantial source of slack in the labor market going forward. Our analysis implies that the high levels of labor force participation in the 20 years prior to the Great Recession were unusual and are unlikely to be repeated in the coming decades.

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Fed's Employment Mandate: Cyclical and Structural Forces Clash

Chair Yellen has shaped Fed policy to strengthen the recovery so as to create more jobs and reduce unemployment.¹ At the core of this policy stance is the belief that there is substantial economic slack—"cyclical unemployment"—that can be reduced with a more robust recovery. Assuming that current unemployment is "mainly cyclical," the first section of this week's note presents estimates of the amount of GDP growth required to lower the unemployment rate to the natural rate. We show that a likely glide path would entail approximately two years of modest above-potential growth consistent with the FOMC's (and our own) outlook. Unfortunately, most of the benefits of such an approach will not go to those encountering the most difficulty finding employment—women and older workers.

The second section presents evidence that much of the recent reductions in the labor force may stem from declining participation rates. We show evidence that the majority of this decline may be caused by ongoing structural developments. Although such assessments are imprecise, a significant structural component would imply that Chair Yellen's desire to eliminate economic slack may require less of a boost to GDP growth than estimated in section 1, and as implied in the Fed's outlook.² One extreme view (not ours) would suggest that if the decline in the participation rate were all structural, continuing the declining trend observed during the past five years could contribute to reducing the labor force by as much as ½ a percentage point a year.³ This would imply that the economy may be much closer to full employment than suggested by the headline unemployment rate.

The key question is whether the Fed's near-term focus on unemployment risks over-extending the current easy policy stance. Estimates of the immediate inflationary impact of reduced slack are generally small.⁴ Our main concern is that currently well-anchored inflation expectations may become dislodged. If we believe expectations about future inflation are influenced by the current and prospective evolution of economic slack, then current Fed policy may raise inflation expectations directly if the required GDP boost to achieve full employment is overestimated.

Do we risk falling behind the curve for maintaining price stability? Not if a strong recovery draws in resources without large jumps in wages—especially resources currently labeled unavailable for structural reasons. Chair Yellen is presuming that a plethora of jobs (with only a modest rise in current wages) would induce retirees to reenter the labor force, and delay young people from seeking additional education. We would characterize the current Fed policy stance as having a risk distribution with "fat tails." Potential outcomes depend importantly on the relative share of cyclical and structural forces at work in the labor market.

¹ Janet Yellen "What The Federal Reserve is Doing to Promote a Stronger Job Market" March 31, 2014 <http://www.federalreserve.gov/newsevents/speech/yellen20140331a.htm>

² An alternative analytical framework for decomposing and assessing structural and cyclical contributions to the labor market is found in Peter D'Antonio "Division of Labor" US Macro Focus April 4, 2012. This and an updated study found that non-demographic factors accounted for less than half of the decline in the labor force participation rate between 2009 and 2013.

³ The labor force participation rate declined from 65.7 in April 2009 to 62.8 in April 2014, an average annual rate of decline of 0.6 percentage point. To be sure, the participation rate has stabilized around 63 percent during the last six months—a move consistent with possibly more entrants coming into the work force as the recovery gains momentum.

⁴ See Benjamin Mandel "Perspectives - Missing Inflation? Explaining the Behavior of U.S. Consumer Prices" May 1, 2014 for further discussion on estimates of the Phillips Curve.

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Boosting Employment with GDP Growth: Accentuating the Cyclical

Okun's Law is the workhorse that most economists use to calibrate the amount of GDP growth required to lower the unemployment rate.⁵ Simply stated, Okun's Law relates deviations in the unemployment rate from the natural unemployment rate to the gap between potential and actual GDP:

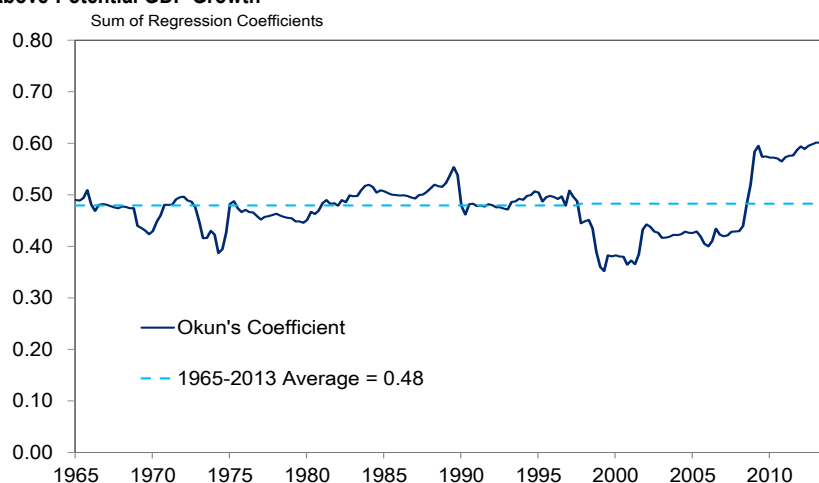
Algebraically Okun's Law is written as

$$U - U^* = a + b^*(GDP^* - GDP)$$

where U = unemployment rate, U^* = natural unemployment rate, GDP^* = potential GDP and GDP = actual GDP.

Estimates of the Okun coefficient (b) gauge the extent to which actual GDP growth must exceed potential GDP growth to lower the unemployment rate relative to the natural rate. Understanding how Okun's coefficient may have changed over time is critical for determining the appropriate monetary policy stance, and assessing how long it may take to achieve full employment if unemployment were mainly cyclical.

Figure 1. Okun's Coefficient: Estimates the Decline in Unemployment Rate After One Year of Above-Potential GDP Growth



Note: Rolling regression estimates using a 15-year window from 1965-2013.
Source: Citi Research.

Estimates of Okun's coefficient have been amazingly stable.

Estimates of Okun's coefficient have been amazingly stable (around 0.5) until 1998 (Figure 1). For the next decade through much of 2008, structural changes associated with the dot-com boom and bust and the real estate bubble distorted estimates of Okun's coefficient to the downside. More recently, the collapse and extreme disruptions associated with the global financial crisis and Great Recession may have induced some "mean reversion" and overshooting in recent coefficient estimates. Interestingly, the average of the estimated coefficients from 1998-2013 is almost exactly the same as the pre-1998 average of 0.48.

⁵ An empirical relationship estimated by Arthur Okun in the 1960's, its longevity has been surprising in light of enormous structural changes the US economy has undergone in the last half century.

Figure 2. Required GDP Growth With Different Estimates of Okun's Coefficient
Closing Cyclical Unemployment Gap Requires 1-2 Years of Above-Potential GDP Growth

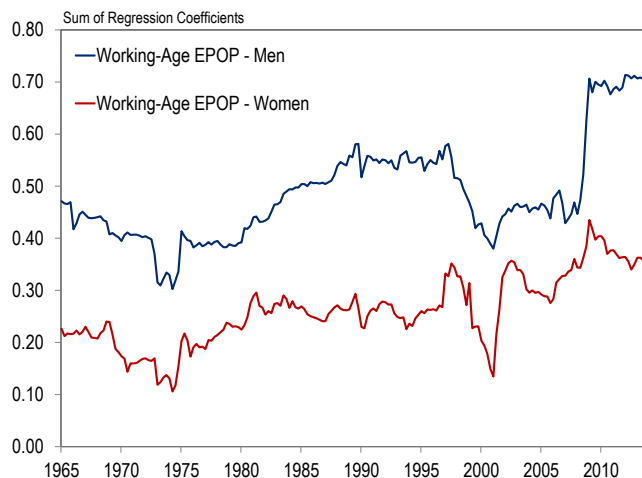
Years Required to Close U-Gap	Actual U-Rate	Natural U-Rate (CBO)	U-Gap	Okun Coefficient	GDP Gap	Potential GDP Growth (CBO)	Required GDP Growth
1	6.3	5.5	0.8	0.5	1.7	2.6	4.3
2					0.8		3.4
1	6.3	5.5	0.8	0.4	2.0	2.6	4.6
2					1.0		3.6
1	6.3	5.5	0.8	0.6	1.3	2.6	3.9
2					0.7		3.3

Sources: Bureau of Labor Statistics, Bureau of Economic Analysis, Congressional Budget Office, and Citi Research.

These estimates imply that Chair Yellen's goal of lowering the unemployment rate to the natural rate would require maintaining GDP growth at approximately 3½ percent for two years.

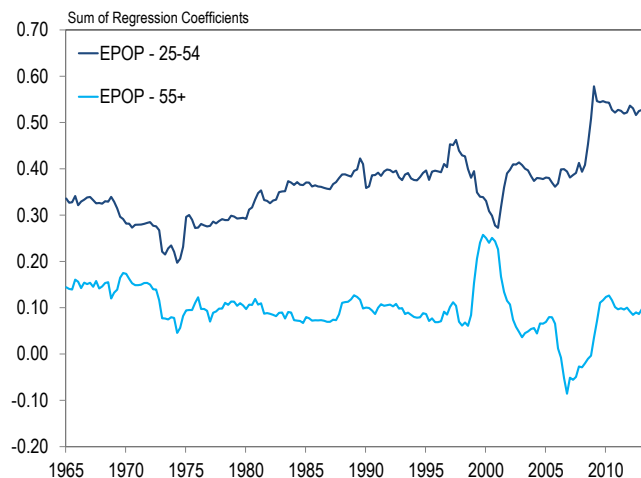
These estimates imply that Chair Yellen's goal of lowering the unemployment rate to the natural rate would require maintaining GDP growth at approximately 3½ percent for approximately two years (**Figure 2**). Such a glide path would imply no change in the policy stance until mid-2015—exactly as the FOMC's forward guidance suggests.

Figure 3. Gender Bias in GDP-induced Employment



Source: Citi Research.

Figure 4. Demographic Bias in GDP-induced Employment



Source: Citi Research.

There is compelling evidence that the employment gains from faster GDP growth likely will vary considerably across different demographic groups.

There is compelling evidence that the employment gains from faster GDP growth likely will vary considerably across different demographic groups. Figures 3 and 4 show rolling regression estimates of Okun's coefficient using different employment-to-population ratios in place of the unemployment gap. The evolution of these estimates implies that GDP-induced employment gains likely will favor men over women (**Figure 3**), and those in the prime-age working population over older workers (**Figure 4**).⁶ It is unfortunate that those groups known to have the most difficulty finding jobs (women and older workers) will benefit the least from the blanket approach of using monetary policy to address labor market weakness.

⁶ This conclusion is implied by the smaller size for the estimated coefficients for these demographic groups.

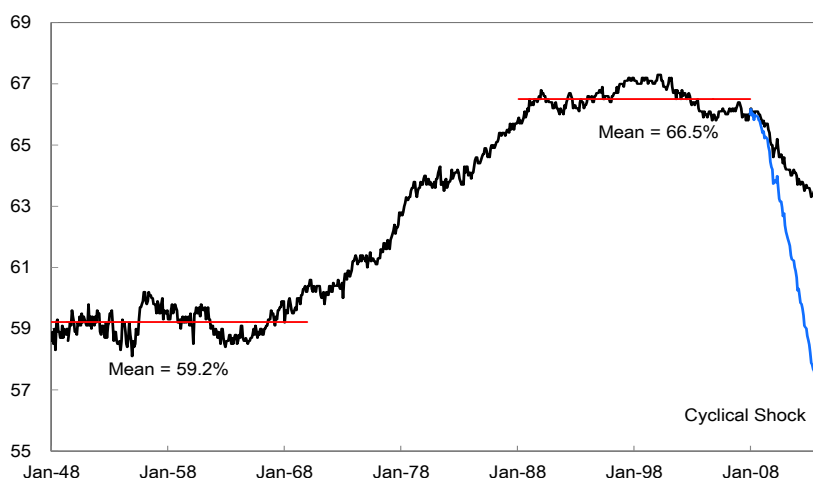
Declines in Labor Force Participation: It's Mainly Structural

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In our view, the majority of the ~3.5 percentage point decline in labor force participation since the Great Recession is structural.

April's 806 thousand person decline in the U.S. civilian labor force was large, but also entirely consistent with the declining path of the labor force participation rate over the past 6 years. Over that period, labor force participation fell dramatically as millions of workers have dropped out of the workforce and have not been replaced. The big question is: are they going to come back as economic conditions continue to improve? Stated differently, do they constitute a material source of slack in the labor market that would delay the impending cycle of hikes to the fed funds rate? We think that the answer is 'no,' and below we review the evidence for and against that thesis.

Figure 5. How Large Would a Cyclical Shock Have To Be To Explain The Recent Decline?



Sources: Bureau of Labor Statistics and Citi Research.

Historical dynamics of the participation rate imply an implausibly large cyclical shock over the past five years. Thus, changes in participation likely have a substantial structural component.

Our first reason that the decline in participation since 2008 is largely structural takes a top-down approach. The pre-financial crisis period was characterized by a 20 year period of stability (**Figure 5**), wherein the participation rate cycled around 66.5 percent. In terms of the flows of workers, each month over that period about 3.4 percent of workers outside the labor force entered, and about 1.7 percent of the workers in the labor force exited.

Now, if the recent decline in participation were entirely cyclical, then we believe the size of the implied shock to induce such a decline would be implausibly large. The reason is that the participation rate has had a fairly tight mean reverting tendency since the late-1980s. Therefore, based on that rate of mean reversion, the size of the cyclical shock necessary to generate the recent 3.5 percent decline in participation is a staggering 10 percentage points.⁷ To put this in perspective, it would require a cyclical shock equivalent to plummeting participation below levels ever seen since the data were first collected in 1948.

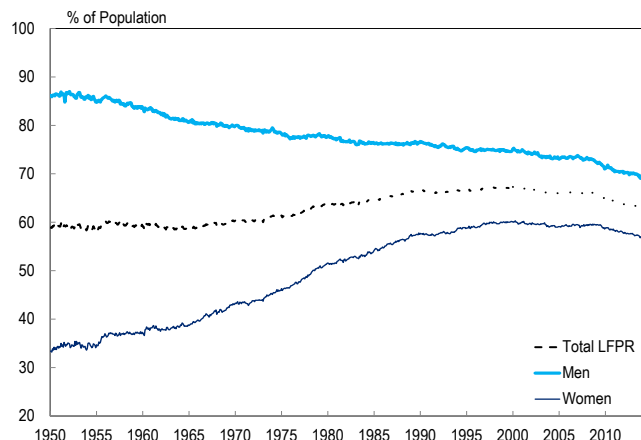
⁷ The reason that the cyclical shock would likely be bigger than the observed decline in participation is that, in each month, workers are still entering the workforce at the same (structural) rate as before. Given the greater number of workers outside of the labor force due to the temporary shock, the number of entering workers would push the participation rate back towards its long-run average. The observed participation rate is the net effect of this upward mean reverting tendency and the downward temporary shock, our estimate of which is shown in Figure 5.

Our top-down estimates imply a 2 percentage point structural decline.

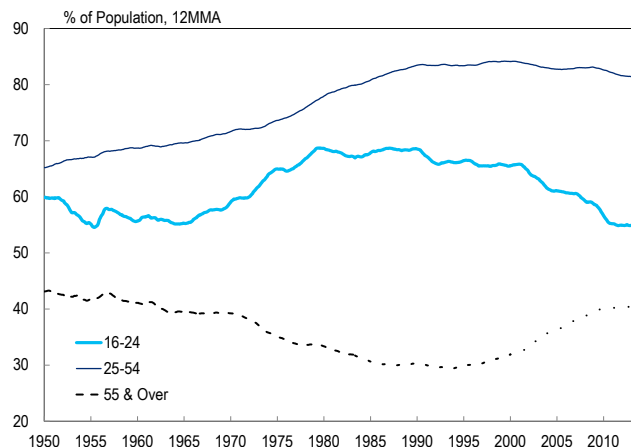
Then how much of the recent decline is structural? The same top-down framework implies a structural decline of the participation rate of 2.0 percentage points, within a likely range of 1.7-2.3; in other words, over half of the 3.7 percentage point decline since 2008 has been due to a lowering of the long-run rate to a 'new normal' of roughly 64.5 percent. If anything, this appears to be an underestimate of the amount of structural change taking place. Looking back at history, the steady upward march of the participation rate from 59.2 percent (between 1948-1970) to the pre-crisis norm was remarkably unaffected by the large business cycle swings of the 1970s and 1980s. This suggests that structural factors such as demography and persistent labor market policies have been playing a very important role.⁸

We also note that the remainder of the decline implied by this methodology – the implied cyclical component – is about 1.5 percentage points. This provides an estimate of the increasing engagement with the labor market as economic conditions improve and participation recovers to its new normal rate of 64.5 percent.

Figure 6. Participation by Gender and Age



Sources: Bureau of Labor Statistics and Citi Research.



Sources: Bureau of Labor Statistics and Citi Research.

An examination of the labor market from the bottom up tells a similar story, driven by demographics, hysteresis of the long-term unemployed and policy-driven disincentives to work.

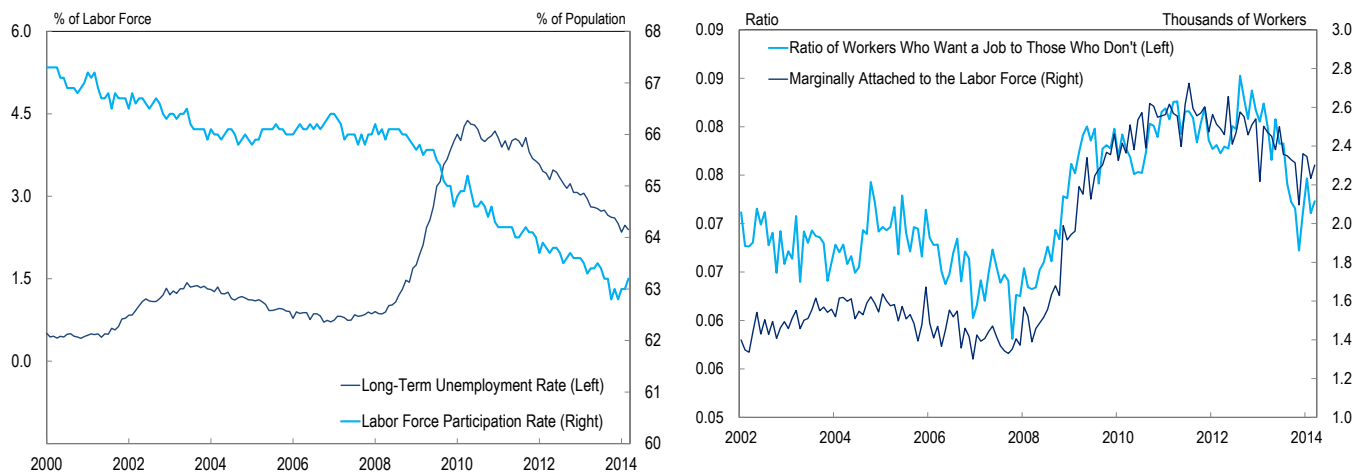
An examination of the labor market from the bottom up tells a similar story. Demographics matter insofar as the retirement of the baby boomers accounts for much of the recent decline. This mirrors a similar increase in participation that occurred in the 1970s when baby boomers entered the workforce and female participation was on the rise. Now, gender specific trends have evened out (**Figure 6**). Female participation crested in the late 1990s and is declining at a rate similar to that of male participation. Most importantly, baby boomers are shifting from the high participation 25-54 year-old group (at an average of 80 percent) to the lower participation 55+ group (at an average of 40 percent).

In addition to demographic factors, many of the people who have left the labor force transitioned out of a state of long-term unemployment (**Figure 7**). While initially this reasoning was used in support of the cyclical view of the participation rate (i.e., when unemployment normalizes, so will the participation rate), there is a growing consensus that these types of workers are only slow to return to the workforce if at all. In other words, persistent cyclical unemployment can become structural, possibly due to the rapidly depreciating human capital of the unemployed and

⁸ The structural portion can be interpreted as the decline in the long-run participation rate necessary for a cyclical shock to match the current rate of 62.8 percent. We acknowledge that there is some uncertainty around what the long-run level has actually been over the past 20 years. Therefore, we compute a likely range of structural effects corresponding to one standard deviation on either side of the mean long-run rate.

marginally attached workers, or possibly due to some stigma against those who have not recently been employed. Indeed, among those not in the labor force, the ratio of people who want a job to those who don't has been falling, indicating a higher likelihood that their status outside of the labor force is permanent.

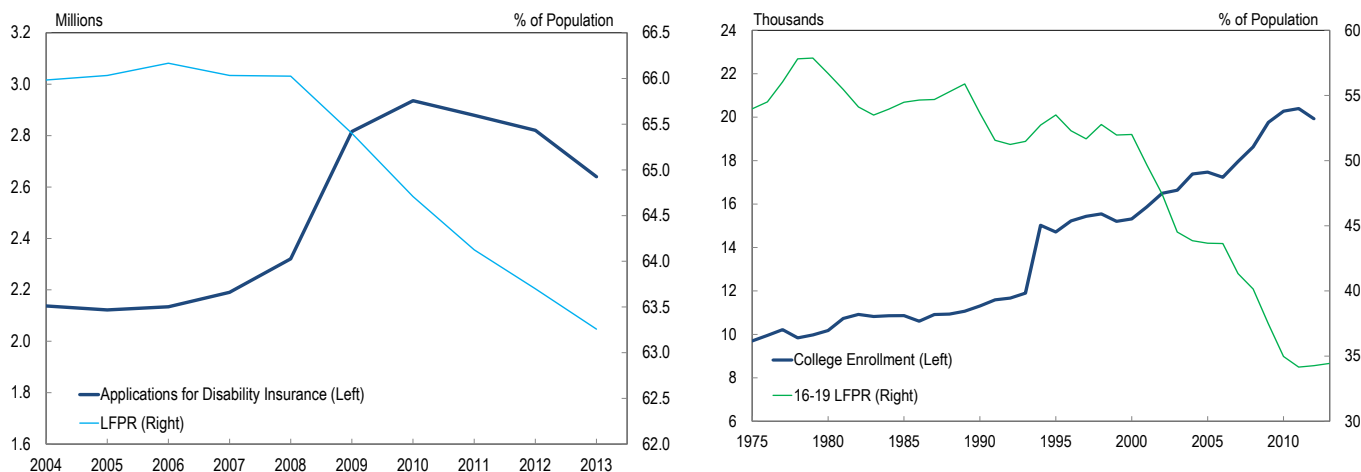
Figure 7. Long-Term Unemployed and Marginally Attached Workers



Sources: Bureau of Labor Statistics and Citi Research.

Sources: Bureau of Labor Statistics and Citi Research.

Figure 8. Disability Insurance and College Enrollment Trends



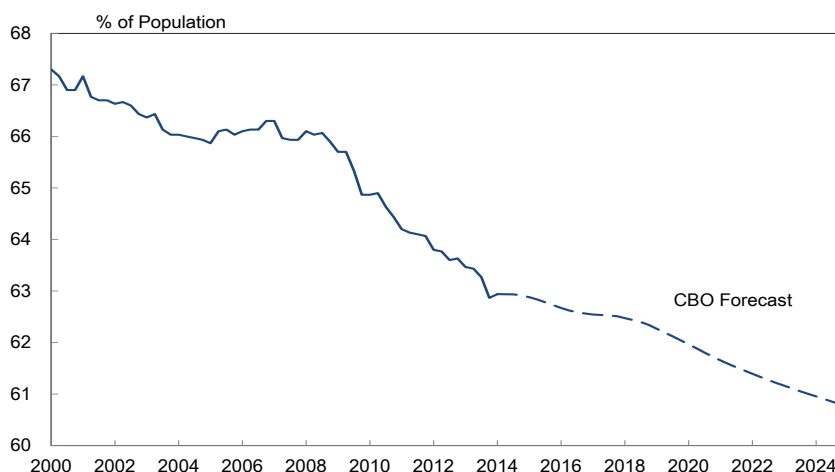
Sources: Bureau of Labor Statistics, Social Security Administration and Citi Research.

Sources: Bureau of Labor Statistics, the Census Bureau and Citi Research.

This hysteresis argument is commonly used to explain why prime-age labor participation has also been falling. Other factors contributing to younger workers' persistent sojourns outside of the labor force include enrollment in either disability insurance programs or institutions of higher education. Incidence of both enrollments has grown robustly during the recovery (**Figure 8**). Arguably, these trends need not lead to permanent exit from the workforce, particularly investment in education if it is done correctly, but at very least they suggest that workers reengaging with the labor market will do so only gradually in the coming years. Finally, other policies will also play a part in promoting long-term departures from the labor force. For example, the Affordable Care Act will allow some workers, particularly older ones, to drop out of the labor force insofar as they can get healthcare insurance without working.

If we are experiencing a structural downward shift in participation, what will be the new normal? There are many forces pushing in different directions. The ageing population will continue to exert downward pressure on the participation rate. The ongoing cyclical recovery in aggregate demand will exert some upward pressure on participation among prime-aged workers, though the lasting hysteresis effects of the Great Recession will distort normalization. On balance, the role of labor-market and other structural policies – broadly defined to include unemployment and disability insurance, healthcare reform, among others – may incentivize more workers to remain on the sidelines.

Figure 9. Congressional Budget Office Forecasts of Labor Force Participation



Sources: Congressional Budget Office and Citi Research.

Balancing these disparate forces, the Congressional Budget Office expects continued declines in participation over the next decade.

Balancing these disparate forces, the Congressional Budget Office expects continued declines in participation over the next decade, and projects a decline to 60.8 percent by the end of 2024 (**Figure 9**). Participation levels that low were last seen in the early-1970s, before participation among women began to ramp up in earnest. The CBO's forecast presumes no reversal of labor force participation among women – or among any other particular group, age, ethnic or otherwise. Rather, it is largely driven by the aging baby boomer generation, which exerts a great deal of downward pressure on the overall rate. The reality is that the mid-60 percent levels of labor force participation we saw over the past few decades prior to the Great Recession were unusual and are unlikely to be repeated in the coming decades.

May 2014				
Monday	Tuesday	Wednesday	Thursday	Friday
5 ISM Non-Manufacturing <u>PMI</u> <u>Prices</u> Mar 53.1 58.3 Apr 55.2 60.8 Auction 3 & 6 Mth. Bills: \$48.0B	6 International Trade Balance Feb -\$41.9B Mar -\$40.4B Auction 3-Yr. Note: \$29.0B Auction 1 Mth. Bill: \$35.0B	7 Mortgage Applications Nonfarm Productivity <u>Prod</u> <u>ULC</u> 4QR 2.3% -0.4% 1QP -1.7% 4.2% Consumer Credit Feb \$13.0B Mar \$17.5B Auction 10-Yr. Note: \$24.0B	8 Jobless Claims 5/3 319 Thous Auction 30-Yr. Bond(r): \$16.0B	9 Wholesale Inventories Feb 0.7% Mar 1.1%
12 Federal Budget Balance Apr 13 \$112.9B Apr 14 Auction 3 & 6 Mth. Bills: \$48.0B(E)	13 Small Business (Apr) Import Price Index <u>Total</u> <u>ExPetro</u> Mar 0.6% 0.6% Apr(E) 0.4% 0.2% Retail Sales <u>Total</u> <u>ExAuto</u> Mar 1.2% 0.7% Apr(E) 0.3% 0.6% Business Inventories Feb 0.5% Mar(E) 0.4% Auction 1 Mth. Bill: \$40.0B(E)	14 Mortgage Applications Producer Price Index <u>Final Demand</u> <u>ExF&E</u> Mar 0.5% 0.6% Apr(E) 0.2% 0.2%	15 Jobless Claims 5/10 330 Thus(E) Consumer Price Index <u>Total</u> <u>ExF&E</u> Mar 0.2% 0.2% Apr(E) 0.2% 0.2% Real Earnings (Apr) Empire State Manufacturing Apr 1.3% May Industrial Prod. & Cap. Util. Mar 0.7% 79.2% Apr(E) 0.0% 79.0% Philly Outlook Survey Apr 16.6% May(E) 15.0% Housing Market Index Apr 47 May Ann. 10-Yr. TIPS(r): \$13.0B(E)	16 Housing Starts and Permits Apr 946K 997K May(E) 1,010K 1,040K Reuters/Michigan Sentiment AprF 84.1 MayP(E) 85.0
19 Auction 3 & 6 Mth. Bills: \$48.0B(E)	20 Auction 1 Mth. Bill: \$40.0B(E)	21 Mortgage Applications FOMC Minutes Released	22 Jobless Claims 5/17 Existing Home Sales Mar 4.59M Apr(E) Leading Indicators Mar 0.8% Apr(E) Ann 2-Yr. FRN: \$13.0B(E) Ann. 2-Yr. Note: \$31.0B(E) Ann. 5-Yr. Note: \$35.0B(E) Ann. 7-Yr. Note: \$29.0B(E) Auction 10-Yr. TIPS: \$13.0B(E)	23 New Home Sales Mar 384K Apr(E)
26 Memorial Day NYSE Holiday Federal Gov't Holiday	27 Durable Goods Orders <u>Total</u> <u>ExTrans</u> Mar 2.9% 2.4% Apr(E) S&P/CaseShiller (Mar) FHFA (Mar) Consumer Confidence Apr 82.3 May(E) Auction 2-Yr. Note: \$31.0B(E) Auction 3 & 6 Mth. Bills: \$48.0B(E)	28 Mortgage Applications Auction 2-Yr. FRN: \$13.0B(E) Auction 5-Yr. Note: \$35.0B(E) Auction 1 Mth. Bill: \$40.0B(E)	29 Jobless Claims 5/24 GDP & Chain Price Index 1Q14A 0.1% 1.3% 1Q14P(E) Corporate Profits (1QP) Pending Home Sales (Apr) Auction 7-Yr. Note: \$29.0B(E)	30 Personal Income & Consumption Mar 0.5% 0.9% Apr(E) Chicago Barometer <u>PMI</u> <u>Prices</u> Apr 63.0 55.2 May(E) Reuters/Michigan Sentiment MayP(E) 85.0 MayF(E) Farm Prices (May)

(E) Indicates Citigroup estimates. (A) Advance. (P) Preliminary. (F) Final. (UNCH) Unchanged. (R) Revised. Contributors: Martha Berasain and Cathy Gaeta.

Notes

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Appendix A-1

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