



FEDERAL RESERVE BANK *of* ST. LOUIS

CENTRAL TO AMERICA'S ECONOMY®

WWW.STLOUISFED.ORG

## **The Rise and Fall of Labor Force Participation in the U.S.<sup>1</sup>**

**Exchequer Club  
Washington, D.C.  
Feb. 19, 2014**

### Introduction

My topic for today is labor force participation in the U.S. This has been a controversial subject in current macroeconomic discussions, and so I will try to offer my own perspectives on the issue.

The participation rate—a measure of the number of people actively involved in labor markets—has generally been a secondary concern in macroeconomics. However, with recent sharp declines following the financial crisis and recession of 2007-2009, it has suddenly become a salient topic, and one that gets discussed even in non-economic settings. For us macroeconomists, to get one of our variables into kitchen table discussions is really exhilarating. We are right up there with Jimmy Fallon! We are not used to this, and I am not sure we can comfortably take in all of the excitement.

At its broadest level, the debate about the labor force participation rate is a debate about the nature of the U.S. economy over the 4½ years since the end of the recession in the summer of 2009. Should we characterize the economy as substantially back to normal following the very severe recession? Or, has little progress really been made, so that the economy remains far from its potential? There are clear lines of argument on both sides, sometimes blurring political boundaries. Some suggest that the extraordinary policy response since the end of the recession has been largely ineffectual, perhaps citing the very flat employment-to-population ratio since 2009,<sup>2</sup> and that their own suggested policy responses would have produced better outcomes. Others emphasize the risk associated with the extraordinary policy response, perhaps citing the Fed's now \$4.1 trillion balance sheet and the nation's relatively high debt-to-GDP ratio. Still others argue that the economy has recovered as well as can be expected in the wake of a major financial crisis, perhaps citing a recovery in real consumption expenditures, an

---

<sup>1</sup> The views expressed here are my own and do not necessarily reflect the views of others on the Federal Open Market Committee. I thank my staff for helpful comments.

<sup>2</sup> For a recent analysis of the employment-to-population ratio as a labor market indicator, see Kapon and Tracy (2014).

improved housing market, a recovery in equity price valuations, and substantially lower unemployment. This last group might point to the euro area as an example of an economy that has suffered through a double-dip recession over the past several years, eventually leading to unemployment rates exceeding 12 percent, while the U.S. avoided this fate.

Labor market performance is at the heart of the debate over how to characterize the state of the U.S. economy. While unemployment in the U.S. was at 10 percent in the fall of 2009, it has now declined to 6.6 percent on the latest reading and has generally declined much faster than many forecasters anticipated. In tandem with this rosy development, however, there has been a substantial decline in labor force participation. Some say that the decline in labor force participation is a bad omen for U.S. macroeconomic performance, with labor market dropouts reflecting frustration with the state of the economy. I will call this the “bad omen” view. Under this interpretation, the decline in the unemployment rate does not really reflect an improving labor market, and policymakers should look elsewhere to measure labor market outcomes. Others, however, argue that the decline in labor force participation simply reflects changing demographics in the U.S. economy, and that different demographic groups have different propensities to participate in market work. As we have different numbers of people in these different demographic groups, we should naturally expect the aggregate labor force participation rate to change. I will call this the “demographics” view. Under this interpretation, the unemployment rate remains about as good an indicator of overall labor market health as ever, and recent sharp declines in the unemployment rate should indeed be taken as indicative of an improving economy and an improving labor market.

In sum, the “bad omen” view sees the recent declines in labor force participation as suggestive of a very weak labor market and discounts the signal coming from recent faster-than-expected declines in unemployment. The “demographics” view sees recent declines in labor force participation as more benign and takes the signal coming from recent faster-than-expected declines in unemployment at face value. Since the FOMC has explicitly tied monetary policy choices to labor market performance, it is of considerable importance which view is more nearly correct.

In my talk today, I will offer three perspectives on these questions. First, I will simply summarize the data on labor force participation and give some background on why this variable has suffered in relative obscurity until now. Second, I will summarize my views on some of the available literature concerning labor force participation as it exists today. This literature is, in my opinion, generally supportive of the demographics view, although there are different strands and many issues are not satisfactorily resolved. Third, I will talk about the future of

research in this area, which is to move to more sophisticated approaches to labor force participation. The more sophisticated class of models might be based on the so-called “home production” literature. I will not bore you with the details of this approach, but I will point out that future progress in this area has to get more serious about the incentives of households to supply labor to market work versus non-market work.

### The Labor Force Participation Rate

The labor force participation rate is a ratio. In the numerator is the labor force, the sum of all persons employed or unemployed. We think of this group as participants in the market workplace. Many have jobs, and the rest are looking for jobs. In the denominator is the civilian non-institutional population 16 years of age or older.

The concept is to divide the population into three groups: employed, unemployed and out of the labor force. This last group could also be called “non-participants” because they are neither working nor are they searching for market work.

Here are some round numbers to keep in your head. The employed group is currently on the order of 145 million people. The unemployed group is on the order of 10 million people. And the non-participant group is on the order of 91 million people. The groups are of very different size, and in particular, the non-participant group is large relative to the unemployed group. A quirk of this way of organizing the data is that people routinely report moving from non-participation to market work without reporting themselves as unemployed.<sup>3</sup> In other words, at least officially, they were not working and were not searching for a job but nevertheless they ended up working at a job in the next reporting period. Evidently, they were not really properly categorized as “non-participants.” I have always found this to be an unsatisfactory aspect of this method of data organization.

Many discussions of contemporary unemployment forecasts focus on the extent to which non-participants will rejoin the labor market. The late 1990s, for example, was an era when many workers seemed to come off the sidelines into the workplace because of an exceptionally strong economy. At the St. Louis Fed, we have constructed unemployment forecasts in recent years assuming that movements from non-participation to employment would be minimal

---

<sup>3</sup> See Canon, Kudlyak and Reed (2014) for an analysis of the relative magnitude of the flows to employment from unemployment and non-participation.

while unemployment was at relatively high levels. This has served us well, as we have more accurately predicted declines in unemployment in the past year than many other forecasters.

If you know only one aspect of the data on labor force participation, it should be this: Labor force participation used to be relatively low, it rose during the 1970s, 1980s and 1990s, peaking in 2000, and it has generally been declining since 2000.

From 1948 to 1966, the labor force participation rate was relatively low and relatively stable, averaging 59.1 percent. That's substantially lower than today's value of 63 percent. It is important to note that we normally consider the U.S. economy to have performed relatively well during this period, especially during the long expansion of the 1960s. Evidently, low labor force participation does not equate with weak economic growth. Surely this is because the factors driving economic growth are different from the factors driving labor force participation.

After about three decades of trending up, the labor force participation rate peaked in the first half of 2000 at 67.3 percent. The rate of increase was slower in the 1990s than it was in the 1970s or 1980s. The peak was more than 8 percentage points higher than the average level during 1948-1966. Many of the studies of labor force participation during this period focused on the increasing participation rates of women. However, whatever effects came from that source, or any other source, the labor force participation rate could not continue to increase forever. Households are making choices about how much labor to supply given current wages and work environments, and women newly joining the labor force would find the right level of participation and stop there.

Since 2000, the labor force participation rate has generally been declining. The pace of decline was particularly sharp during the recession of 2007-2009, but the participation rate also declined steadily in the early 2000s and since the end of the recession in mid-2009.

The general picture, then, is one of a hump shape in U.S. aggregate labor force participation during the postwar era. A satisfactory theory has to account for this hump shape. One way to build such a theory is to appeal to demographics. The nation's workforce had a younger profile as the baby boom generation came of age, and will have an older profile as the baby boom generation continues to retire. Since different age groups have different propensities to participate, this suggests a promising avenue to explain the labor force participation data.

I dare say that the demographic explanation is the gut instinct of many macroeconomists. This is why labor force participation sits in the backseat of many macroeconomic models. Many, including me, might reason that a good demographic model combined with more women in the

labor force during the 1970s, 1980s and 1990s could explain a very large fraction of the hump-shaped movements in aggregate labor force participation over the postwar era. If such a model were fitted to the data, only a small amount of variation in the participation rate would remain to be explained. That small remaining amount of variation might be attributable to business cycle effects (“cyclical”) or it might just be noise about the fundamental hump-shaped trend. Relatively minor cyclical effects on labor force participation would likely be too small to have major macroeconomic implications given everything else going on in a macroeconomic model. Consequently, the thinking would go, maybe we do not need to worry too much about the labor force participation rate.

But this is all just in the heads of macroeconomists. Let me now turn to some of the recent research on labor force participation to see the extent to which such a theory has actually been devised.

#### Recent Research on Labor Force Participation

Let’s start with the Bureau of Labor Statistics. The BLS is, of course, very close to the data and it does routinely project labor force participation over the medium term. In general, its medium-term forecasts from the mid-2000s proved to be too high, meaning its forecast labor force participation rate was considerably higher than values actually observed. More recent medium-term BLS forecasts have a declining rate of participation over the next decade or so, all the way down to 61.6 percent in 2022.<sup>4</sup> Recall that today’s participation rate is 63 percent, so the projection is that the rate would continue to decline by around 15 basis points per year. According to BLS projections,<sup>5</sup> more than 70 percent of this decline is due to pure demographic factors; that is, changes in population shares by age groups, assuming unchanged participation rates for each group.<sup>6</sup>

To the extent that this forecast pans out, the basic direction for the labor force participation rate is down, not up. Those waiting for an upward swing in labor force participation as the economy continues to expand will be disappointed, on average, if this forecast comes to pass. I read the BLS work as supportive of the demographics hypothesis described above.

---

<sup>4</sup> See Toossi (2013).

<sup>5</sup> Author’s calculation based on figures from Toossi (2013).

<sup>6</sup> For more on this topic, see Canon, Debbaut and Kudlyak (2013).

A recent contribution by Shigeru Fujita (2013) at the Federal Reserve Bank of Philadelphia provides some additional insight concerning the decline in aggregate U.S. labor force participation since 2000. Fujita's calculations suggest that about 65 percent of the decline in the participation rate was due to retirements and disability. Fujita points out that the empirical evidence suggests members of these groups have only a small probability of returning to the labor force. If we limit attention only to a period of relatively high economic stress, such as 2007:Q1 to 2011:Q2, we do see more of the decline in participation attributable to discouraged workers, but even then, this is only about 25 percent, according to Fujita's calculations. Over a less stressful period, such as 2012:Q1 to 2013:Q2, the entire decline in the aggregate labor force participation rate is attributable to retirements, with no effect at all coming from an increase in discouraged workers. I read Fujita's contribution as also supportive of the demographics hypothesis.

Troy Davig and José Mustre-del-Río (2013) at the Kansas City Fed provide some analysis of the "shadow" labor supply to gain insight into whether this group is likely to return to the labor force. The shadow group is defined as those who want a job but are not actively seeking one. The authors document that this group is demographically similar to the unemployed. They suggest that any impact on aggregate labor force participation from this group is likely to be small, because flows from this group to unemployment are small and less likely to occur as the recovery continues. I read this as also supportive of the demographics view.

A somewhat older paper by Stephanie Aaronson, Bruce Fallick, Andrew Figura, Jonathan Pingle and William Wascher, published in 2006, examined the decline in labor force participation following the 2001 recession and tried to ascertain how much of the decline at that time was cyclical. It is perhaps important to recall that there was an earlier debate on declining labor force participation, long before the deep recession of 2007-2009. The paper contains as part of the analysis an empirical model of the trend labor force participation rate that includes demographic factors. If that trend model is projected forward to today from 2006, it predicts nearly exactly the labor force participation rate observed in 2012 and 2013. What a great piece of out-of-sample forecasting! I read this as supportive of the demographics view. This model also projects continued decline in the labor force participation rate in the years ahead.

Marianna Kudlyak (2013), at the Richmond Fed, follows up on the empirical model proposed by Aaronson, et al. (2006). Again, the model contains key demographic information such as age, gender and birth-year cohort effects. The model suggests that current aggregate labor force

participation rates are not far off from the model's predicted trend participation rate. Again, I read this as supportive of the demographic view.<sup>7</sup>

Chris Erceg and Andy Levin (2013) have an interesting International Monetary Fund working paper on the intersection between the labor force participation rate and monetary policy. Their paper is a "thinking outside the box" exercise. In what I have presented so far, there is a certain inevitable logic. I said that the data on labor force participation cries out for an explanation based mostly on increasing labor force participation by women and slowly changing demographics. The existing literature more or less provides such an explanation. Erceg and Levin instead ask whether there are other ways to think about this issue. They present evidence from U.S. states on prime-age adults and suggest that the declines in labor force participation for this particular group were mostly cyclical. The authors then ask how monetary policy might be conducted in a world where labor force participation has an important cyclical component. They suggest that the participation decision should get more attention in monetary policy research, a point on which I will agree below.

I do not find the evidence on cyclical versus structural changes in labor force participation in Erceg and Levin as persuasive as the other empirical work I have reviewed.<sup>8</sup> Labor force participation for prime-age males, for instance, has also been on a secular decline for many years. Nevertheless, the Erceg and Levin points about how to conduct monetary policy in a world with important cyclical components in labor force participation are well made.<sup>9</sup>

Some papers get somewhat higher estimates of the fraction of the decline in labor force participation since 2000 due to cyclical factors. For instance, Daniel Aaronson, Jonathan Davis and Luojia Hu (2012) use still another empirical model with demographic factors included and conclude that more than half of the decline in aggregate labor force participation from 2000 to 2011 is due to cyclical factors. Willem Van Zandweghe (2012) tries an alternative method of decomposing the data from 2007-2011 and concludes that more than half of the decline is cyclical. Julie Hotchkiss and Fernando Rios-Avila (2013) have an approach that emphasizes non-linear factors following the severe 2007-2009 recession, and they conclude that nearly all of the decline in aggregate labor force participation following the recession was cyclical. Leila Bengali,

---

<sup>7</sup> A forthcoming working paper by Hornstein and Kudlyak (2013) includes a more elaborate version of this model. Their main finding remains that current labor force participation rates are close to what would be predicted by an empirical model with carefully constructed demographic factors.

<sup>8</sup> For more on this issue, see Canon, Debbaut and Kudlyak (2013).

<sup>9</sup> I also largely agree with the points made by Athanasios Orphanides (2013) in a comment on the paper, in effect that the new labor market slack indicators proposed by Erceg and Levin would be subject to considerable uncertainty and could lead policymakers badly astray.

Mary Daly and Rob Valletta (2013) look at the correlation in the changes in employment and labor force participation in state-level data to gain insight, concluding that a substantial cyclical component exists in the observed aggregate decline in labor force participation.

I am not necessarily swayed by these alternative approaches or results. But it certainly does show that there are many ways to cut the data and interpret the findings. This leads me to my final remarks, namely, where should the literature on labor force participation go next?

### Home Production as the Future

I have reviewed some interesting economic literature on a topic that has been hot, not just among economists, but also among politicians, media, financial markets and even others who are not normally close students of macroeconomic developments. Much of the literature I have reviewed uses the same basic idea: Certain demographic groups have a certain propensity to participate in market work, and one of the main things we need to do as economists is project the number of people in each of these groups in order to determine a reasonable estimate of the expected (or “normal” or “trend”) labor force participation rate in the U.S. economy. Much of the literature concludes that demographics have contributed substantially to the observed decline in U.S. labor force participation since 2000.

Still, the literature as a whole is a bit hollow. Simply saying that people in certain demographic groups tend to make the participation decision one way or another does not do enough to analyze the incentives of household labor supply decisions. The more we know about the details of the household labor supply choices, including choices to participate in market work, the better we can predict the impact of policy on labor force participation. Furthermore, we would like these decisions to be part of the macroeconomic model, as Erceg and Levin suggest.<sup>10</sup>

There is one strand of the literature that does provide a more complete picture of household incentives to supply labor and participate in labor markets. It is the literature on so-called “home production.” We do not need to get into the details here, but the idea is simple. Think of a household as the owner of capital and labor. The household members combine their home capital—refrigerators, ovens, dishwashers, cars, houses—with their labor time to produce

---

<sup>10</sup> For an example of a detailed macroeconomic model with an explicit participation decision that has an impact on policy recommendations, see Imrohoroğlu and Kitao (2012).



home goods, such as a trip, a meal, or some child care.<sup>11</sup> These goods are not acquired in the market and are not counted in GDP, but they matter to the household. The home labor provided does not count in the aggregate statistics on labor supply. The household then has to make decisions about how much time to supply to market work versus work at home, including how many members of the household should participate in market work.<sup>12</sup> If we add to a household production model more explicit treatment of household retirement decision-making as well as of decisions by younger households to acquire human capital, we would get to a more complete model of the labor force participation rate.

This approach is much more detailed regarding household decision-making than the research I have described today. But the extra complexity comes with a benefit, as the approach also allows macroeconomists to better understand the factors driving household labor supply decisions in terms of actual options inside the home, as well as with respect to the informal labor market. More detailed models in this direction will likely be necessary in the future if we want to move the debate on labor force participation forward.<sup>13</sup>

### Conclusion

My topic for today has been the aggregate labor force participation rate in the U.S. While the unemployment rate has declined in recent years, labor force participation has also been declining, perhaps suggesting that unemployment is not as reliable an indicator of macroeconomic performance as it may have been in the past. I gave three perspectives on labor force participation: First, I reviewed the data; second, I reviewed the literature; and third, I suggested directions for future research.

The post-WWII data on aggregate U.S. labor force participation shows a hump-shaped pattern. Participation rose in the 1970s, 1980s and 1990s, before peaking in 2000 and heading into decline up until the present day. Current BLS projections suggest that this decline will continue over the coming decade. The rise is often attributed in part to the maturing of the baby boom generation as well as the increase in the number of women working. The decline has often

---

<sup>11</sup> Time use surveys, like the American Time Use Survey (ATUS) conducted by the BLS, provide a wealth of data to quantify labor supplied to home production. For example, see Aguiar and Hurst (2007).

<sup>12</sup> For an example of the different perspective the home production literature provides on issues in monetary economics, see Aruoba, Davis and Wright (2012).

<sup>13</sup> For an example of the interplay between home production and labor force participation, see Greenwood, Seshadri and Yorukoglu (2005).

been attributed to the aging of the U.S. labor force. A satisfactory model has to account for the rise and fall over many decades. A demographically-based model would seem to have a good chance of success in explaining this data.

I have reviewed some of the available literature on this topic. My view of the literature is that carefully constructed empirical models of the hump-shaped trend in the U.S. labor force participation rate do a good job of explaining the data. These models suggest that the current participation rate is not far from the predicted trend. This means, in turn, that the cyclical component in labor force participation is likely to be relatively small. To the extent these models are correct, then the observed unemployment rate remains as good an indicator of overall labor market health as it has been historically. In particular, the recent, relatively rapid declines in unemployment can be understood as representing an improving labor market. This is the judgment that should inform monetary policy going forward.

The literature is not completely satisfactory, however. I concluded my talk with a brief discussion of how researchers might do a better job of including household decision-making inside the economic model. This would allow us to better understand what motivates or disincentivizes labor force participation. I look forward to seeing research pushing in this direction in the future.

James Bullard, President and CEO  
Federal Reserve Bank of St. Louis

## References

- Aaronson, Daniel; Davis, Jonathan and Hu, Luoja. "[Explaining the decline in the U.S. labor force participation rate.](#)" Federal Reserve Bank of Chicago *Chicago Fed Letter*, No. 296, March 2012.
- Aaronson, Stephanie; Fallick, Bruce; Figura, Andrew; Pingle, Jonathan and Wascher, William. "[The Recent Decline in the Labor Force Participation Rate and Its Implications for Potential Labor Supply.](#)" *Brookings Papers on Economic Activity*, Fall 2006, 1, pp. 69-134.
- Aguiar, Mark and Hurst, Erik. "[Measuring Trends in Leisure: The Allocation of Time over Five Decades.](#)" *Quarterly Journal of Economics*, August 2007, 122(3), pp. 969-1006.
- Aruoba, S. Boragan; Davis, Morris A. and Wright, Randall. "[Homework in Monetary Economics: Inflation, Home Production, and the Production of Homes.](#)" National Bureau of Economic Research *Working Paper No. 18276*, August 2012.
- Bengali, Leila; Daly, Mary and Valletta, Rob. "[Will Labor Force Participation Bounce Back?](#)" Federal Reserve Bank of San Francisco *Economic Letter* 2013-14, May 2013.
- Canon, Maria; Debbaut, Peter and Kudlyak, Marianna. "[A Closer Look at the Decline in the Labor Force Participation Rate.](#)" Federal Reserve Bank of St. Louis *The Regional Economist*, October 2013, 21(4), pp. 10-11.
- Canon, Maria; Kudlyak, Marianna and Reed, Marisa. "[Not Everyone Who Joins the Ranks of the Employed Was 'Unemployed'.](#)" Federal Reserve Bank of St. Louis *The Regional Economist*, January 2014, 22(1), pp. 14-16.
- Davig, Troy and Mustre-del-Río, José. "[The Shadow Labor Supply and Its Implications for the Unemployment Rate.](#)" Federal Reserve Bank of Kansas City *Economic Review*, Third Quarter 2013, pp. 5-29.
- Erceg, Christopher J. and Levin, Andrew T. "[Labor Force Participation and Monetary Policy in the Wake of the Great Recession.](#)" International Monetary Fund *Working Paper No. 13/245*, July 2013.
- Fujita, Shigeru. "[On the Causes of Declines in the Labor Force Participation Rate.](#)" Federal Reserve Bank of Philadelphia *Research Rap Special Report*, November 2013.
- Greenwood, Jeremy; Seshadri, Ananth and Yorukoglu, Mehmet. "[Engines of Liberation.](#)" *Review of Economic Studies*, January 2005, 72(1), pp. 109-133.

- Hornstein, Andreas and Kudlyak, Marianna. "Estimating the Trend in the LFP Rate." Federal Reserve Bank of Richmond, unpublished manuscript, December 2013.
- Hotchkiss, Julie L. and Rios-Avila, Fernando. "[Identifying Factors behind the Decline in the U.S. Labor Force Participation Rate.](#)" *Business and Economic Research*, June 2013, 3(1), pp. 257-275.
- Imrohoroglu, Selahattin and Kitao, Sagiri. "[Social Security Reforms: Benefit Claiming, Labor Force Participation, and Long-Run Sustainability.](#)" *American Economic Journal: Macroeconomics*, July 2012, 4(3), pp. 96-127.
- Kapon, Samuel and Tracy, Joseph. "[A Mis-Leading Labor Market Indicator.](#)" Federal Reserve Bank of New York *Liberty Street Economics* blog, February 3, 2014.
- Kudlyak, Marianna. "[A Cohort Model of Labor Force Participation.](#)" Federal Reserve Bank of Richmond *Economic Quarterly*, First Quarter 2013, 99(1), pp. 25-43.
- Orphanides, Athanasios. "Discussion of 'Labor Force Participation and Monetary Policy in the Wake of the Great Recession' by Erceg and Levin," delivered at the Federal Reserve Bank of Boston 57<sup>th</sup> Economic Conference *Fulfilling the Full Employment Mandate*, April 2013.
- Toossi, Mitra. "[Labor force projections to 2022: the labor force participation rate continues to fall.](#)" *Monthly Labor Review*, Bureau of Labor Statistics, December 2013, pp. 1-28.
- Van Zandweghe, Willem. "[Interpreting the Recent Decline in Labor Force Participation.](#)" Federal Reserve Bank of Kansas City *Economic Review*, First Quarter 2012, pp. 5-34.