Commentary: Reassessing Economic Constraints: Maximum Employment or Maximum Hours?

Stephanie Aaronson

The paper "Reassessing Economic Constraints: Maximum Employment or Maximum Hours?" is a clear exposition of the thought-provoking phenomenon that, in many developed countries, as employment has risen the number of hours worked by each worker has decreased. The result is that the total capacity of labor input doesn't increase as much as it would were the workweek to stay constant. This finding has important implications for policy makers concerned with forecasting potential output and fiscal sustainability.

The authors use an international dataset to establish the negative correlation between what they call the employment rate (more commonly referred to as the employment-to-population ratio) and average weekly hours. They show that this relationship holds across countries—those with higher employment tend to have lower workweeks—and within countries, in the sense that countries with larger increases in employment have experienced more dramatic declines in their workweeks.

To explain this phenomenon, the authors present a model that incorporates fixed costs into employment decisions. As these fixed costs come down, individuals with a higher disutility of work find it more appealing to work. At the same time, because they have a higher

disutility of work, these individuals also choose to work fewer hours. The idea of incorporating fixed costs into a model of labor supply is not new (see for example Cogan, 1980; Hausman, 1980; and the discussion in Blundell et al., 1999). The advance of the model is using fixed costs to explain the simultaneous rise in employment and decline in average hours in the aggregate data.[1]

In describing the fixed costs, it is clear that the authors have in mind explaining the rise in employment among women over the past half century. Indeed, employment among men has been flat or declining over this period. According to the authors, the innovations that may have contributed to declining fixed costs include changes to social norms that have made it more acceptable for women to work, changes in the infrastructure to support working women (paid family leave and childcare), and increased flexibility.

The authors argue that the observed downward trend in the workweek is important to incorporate into our thinking about maximum employment. On average, and for many of the countries in their sample, the workweek has played an important role holding back aggregate hours and gross domestic product (GDP) in recent decades.

My first point in this discussion is that the workweek has been less of a drag on GDP growth in the U.S. than in Europe and that the workweek is not as important a contributor to the slowdown in GDP growth as some other elements of labor input. Table 1 shows a supply side growth accounting, where real GDP growth is decomposed into the growth in labor inputs and the growth in labor productivity. The growth rates are calculated from peak to peak over the past four business cycles and shown as annual averages. Note that labor input and productivity don't exactly add up to GDP because labor input refers to the entire economy, while productivity is calculated for the business sector only, and the table does not include the technical factors that fill in the gap. Since we are focused on labor input, the table does not show a decomposition of labor productivity. To make the hours measure consistent with the measure the authors use, the decomposition uses the actual hours worked per week at all jobs from the Current Population Survey, although typically these decompositions use average weekly hours from the Current Establishment Survey.[2]

Table 1
Real GDP, Labor Input and Productivity

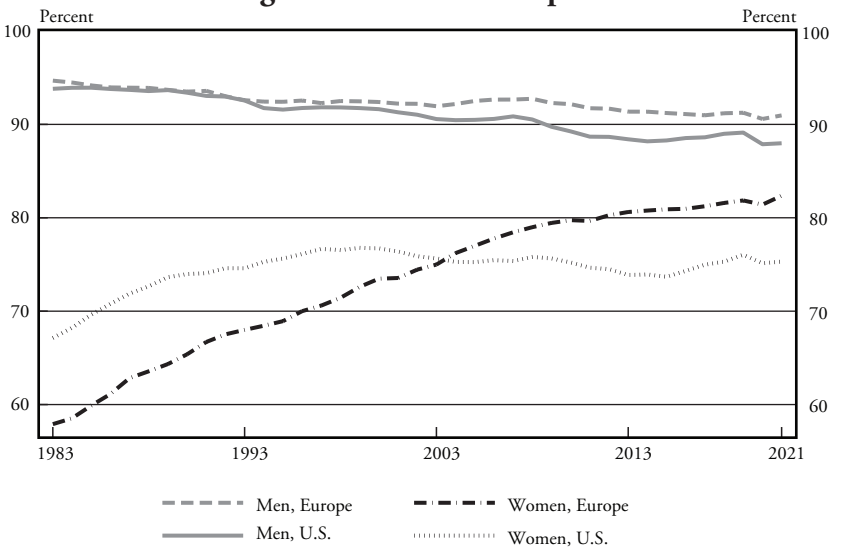
Average annual growth rates				
	1981:Q3-1990:Q1	1990:Q3-2001:Q1	2001:Q1-2007:Q4	2007:Q4-2019:Q4
Real Gross Domestic Product	3.9	3.8	3.0	1.8
Labor input				
Population	1.2	1.2	1.3	0.9
Labor Force Participation Rate	0.5	0.1	-0.3	-0.3
Employment Rate	0.2	0.1	-0.1	0.1
Workweek (CPS)	0.2	-0.1	-0.1	-0.1
Business Sector Labor Productivity	1.8	2.2	2.8	1.4

Note: Columns do not add up because labor input refers to the entire economy, while productivity is measured for the business sector.
Source: Bureau of Labor Statistics, Current Population Survey and the Productivity Costs and the Bureau of Economic Activity, and author's calculations.

In the U.S., the workweek has been a drag on output in recent decades, but it only subtracts about 0.1 percentage point per year from growth. In contrast, the drag from the participation rate has been about 0.3 percentage point per year over the past couple of decades. And more recently in the U.S., the growth in the working age population, 16 plus has stepped down substantially from about 1.25 percent to just under 1 percent between 2008 and 2019. Moreover, since 2016, it has been even slower, in the neighborhood of 0.6 percent due to reductions in immigration. Obviously, the productivity slowdown that started in the mid-2000s also has been an important contributor to slow U.S. GDP growth.

Why has the trend in the workweek in the U.S. differed from that of other advanced economies in recent decades? In part this is due to the trends in labor force participation, as predicted by the authors' model. Chart 1 compares the labor force participation rate in the U.S. and in Europe for prime-age men and women since 1983.[3] The top lines show the downward trend in participation for men, which has been on a slight downward trajectory in both the U.S. and Europe, although the decline is a bit sharper in the U.S. In contrast, over this period nearly every country in Europe saw an increase in participation for women, while the U.S. did not. The cause of the

Chart 1
Prime–Age Labor Force Participation Rate



Source: The Organization for Economic Cooperation and Development (OECD) and author's calculations.

discrepancy is that women in the U.S. began to enter the labor force earlier than women in Europe—in the decades prior to that covered by the authors' paper—but their participation has flattened out more recently, while that of European women has continued to rise. In fact, the average participation rate of women across European countries is 5.8 percentage points higher than that of women in the U.S. This, in turn, has pushed down the workweek more in Europe.

This brings me to my second point, which is that I am less optimistic than the authors about the possibility that labor force participation will increase going forward, with the related risk that the workweek will decline. Putting this in the context of the authors' model, I am not convinced that in the U.S. we are going to see a continued fall in barriers to employment. Female participation is still well below that of males and below that in many European countries, and so there clearly is space for it to rise. Moreover, there is evidence on policies that would contribute to increased female labor force participation. For instance, research shows that one of the most important policies to enhance female labor force participation—one the authors mention—is better child-care infrastructure (Olivetti and Petrongolo 2017, Thévenon 2013). But recent policy

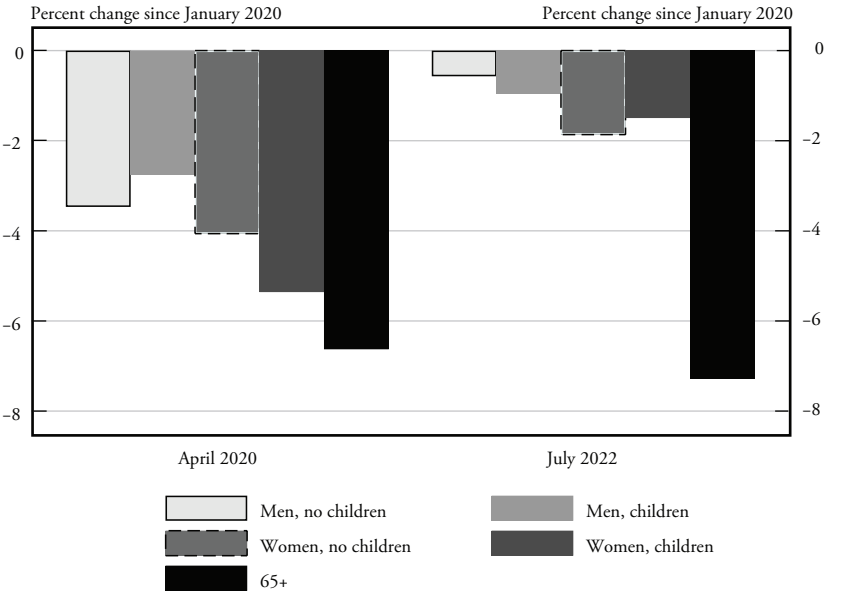
efforts in the U.S., including the failure of the Congress to include childcare in the Inflation Reduction Act despite the dire state of our childcare system in the wake of the pandemic, suggest that the U.S. is unlikely to move in this direction soon. In contrast, some recent events, including the reversal of Roe vs. Wade, may make it more difficult for women to work (see for example Kalist 2004, Meyers 2017, and Jones 2021). I am also skeptical that remote work or changes to technology that have made independent contracting easier will prove to be game changers in terms of bringing people back into the labor force. As Chart 2 shows, despite continued high levels of remote work—at least relative to pre-pandemic levels—labor force participation remains low for men and women, with and without children, and especially for older workers.

While the authors focus on long-term trends in employment and hours of work, in thinking about the Federal Reserve's (Fed) maximum employment mandate, it is necessary to examine the relative importance of the workweek and other labor market inputs over the business cycle.

My third point is that for the purposes of the Fed's full employment mandate, the unemployment rate is the best gauge of the state of the business cycle. This is true in both a statistical sense and because movements in the unemployment rate are the most important contributors to changes in slack. In a statistical sense, most other indicators of the business cycle are so highly correlated with the unemployment rate and the relationship is so regular that it is essentially a sufficient statistic for what is going on in the economy. Moreover, we receive data on the unemployment rate in a very timely fashion—typically less than a week after the month ends—and the unemployment rate data do not revise, unlike, for instance, the data on GDP or payroll employment.

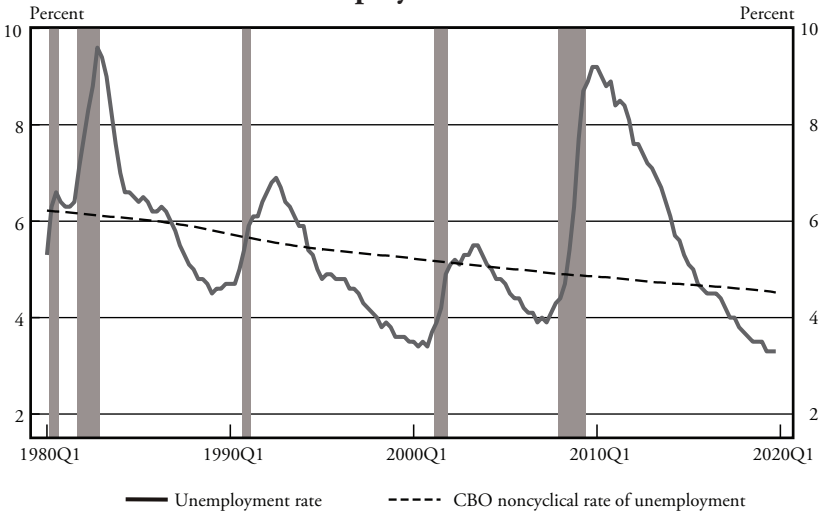
Another advantage of the unemployment rate is that when we observe changes in the unemployment rate, most of that information is related to the changes in the business cycle and not related to structural changes in the unemployment rate itself. This is not true for either the workweek or the labor force participation rate. Chart 3 displays the unemployment rate along with an estimate of its trend from the Congressional Budget Office (CBO). The grey-shaded areas mark

Chart 2
Change in Labor Force Participation Rates



Note: Children refers to youngest child under 12.
Source: Current Population Survey and author's calculations.

Chart 3
Unemployment Rate



Note: Gray shading represents U.S. recessions as dated by the National Bureau of Economic Research (NBER).
Source: Bureau of Labor Statistics, Current Population Survey, Congressional Budget Office and author's calculations.

recessions. Clearly, most of the movement in the unemployment rate is at a business cycle frequency.

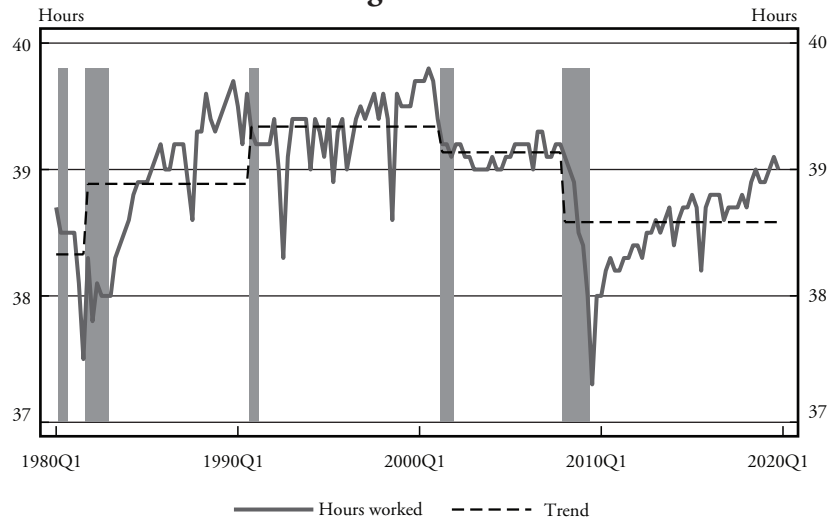
Compare this with the workweek shown in Chart 4. The trend is calculated as the average from business cycle peak to business cycle peak. You can see that the workweek is cyclical around the trend, but that the overall movements are relatively small and much of the movement is related to the trends.[4]

Chart 5 depicts the labor force participation rate along with one of the trends from a Brookings Paper on Economic Activity that I co-authored with former Fed colleagues (Aaronson et. al 2014).[5] While the participation rate exhibits some cyclicality, most of the movement in the labor force participation rate (LFPR) is related to the trend: the rise in female participation over the 1980s and 1990s and then the decline largely due to increased retirements, as the Baby Boomers have been aging.

Another reason to focus on the unemployment rate is that movements in the unemployment rate are responsible for a large part of the change in slack over the business cycle. The Current Macroeconomic Conditions section of the Federal Reserve Board maintains a model that decomposes the change in the output gap over the cycle.[6] According to the model, over half of the movement in the output gap is explained by changes in the unemployment rate, while just over 25 percent is attributable to changes in the workweek, and no more than 10 percent is attributable to changes in the participation rate (See also Fernald, et al. 2017).

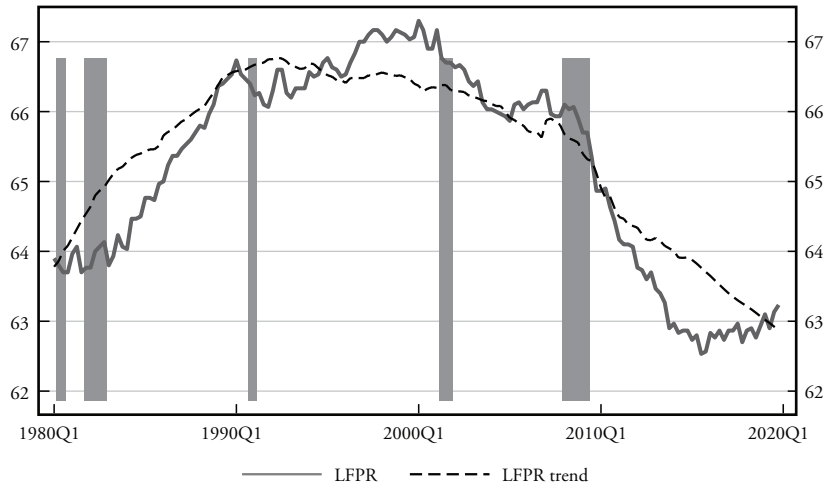
This brings me to my fourth point, which is that while the workweek and the LFPR are not the most important cyclical indicators, they are cyclical and in a way that has important repercussions for how we think about the evolution of the economy over the medium term. Chart 6 shows the correlation of the cyclical component of the workweek, or workweek gap, calculated as the average Current Population Survey (CPS) workweek from peak to peak subtracted from the workweek, with the unemployment rate gap, calculated as the CBO noncyclical unemployment rate subtracted from the unemployment rate (all variables are in logs). The chart shows that the

Chart 4
Average Workweek



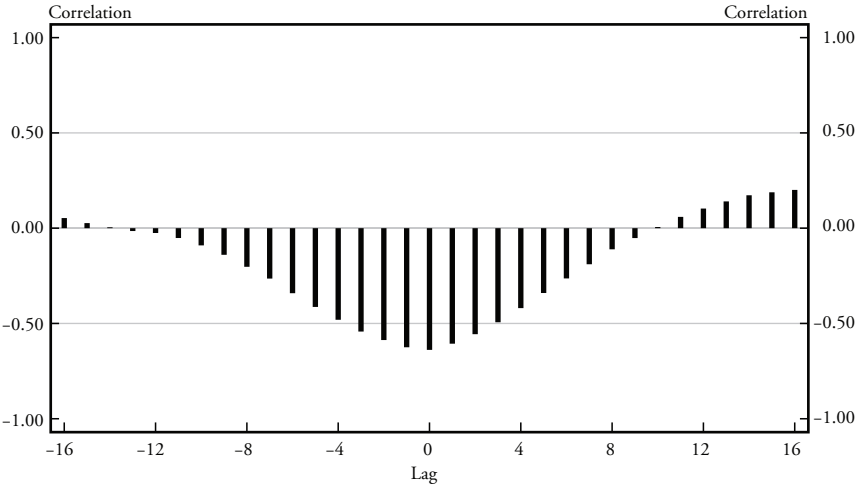
Note: Trend calculated as average hours from peak–to–peak. Gray shading represents U.S. recessions as dated by the NBER.
Source: Bureau of Labor Statistics, Current Population Survey and author's calculations.

Chart 5
Labor Force Participation Rate



Note: LFPR trend with last 15 cohorts extrapolated beginning in 2007 from Aaronson et al. (2014). Gray shading represents U.S. recessions as dated by the NBER.
Source: Bureau of Labor Statistics, Current Population Survey and author's calculations.

Chart 6
Correlation of the Unemployment Rate Gap and the Workweek Gap

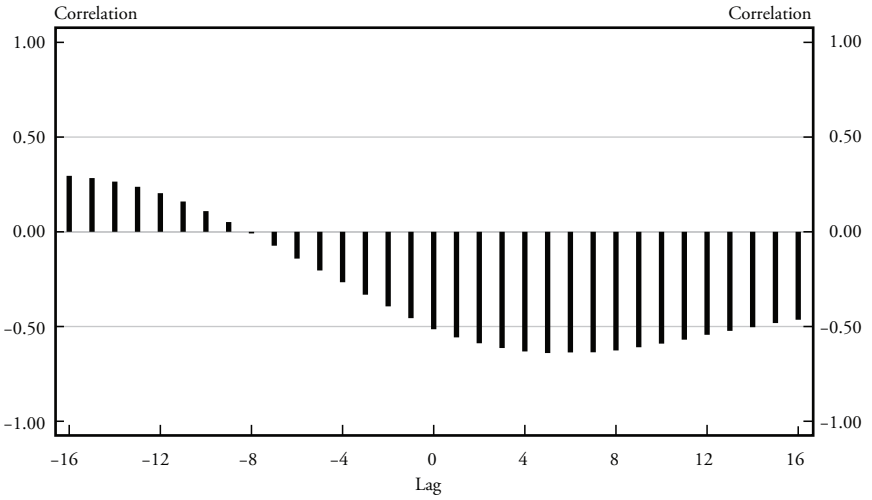


Note: The unemployment rate gap is calculated as the CBO noncyclical unemployment rate subtracted from the unemployment rate. The workweek gap is calculated as the average workweek from peak to peak subtracted from the workweek. All variables are logged.
Source: Bureau of Labor Statistics, Current Population Survey, Congressional Budget Office and author's calculations.

workweek is moderately negatively correlated with the unemployment rate and that the strongest correlation is contemporaneous. So, for instance, during recessions, demand falls and the unemployment rate gap rises, as employers cut employee hours. And in fact, employers continue to cut hours for a number of quarters—the current workweek is correlated with lags of the unemployment rate—but the correlation diminishes and, after about eight quarters or two years, the impact of the unemployment rate gap at a given point in time on the workweek gap has faded out. This is consistent with a long history of literature showing that employers do adjust employee hours, and not just employment, in response to changes in demand (see Ohanian and Raffo (2012); Borowczyk-Martins and Lalé (2019) and studies cited therein).

Chart 7 shows the correlation of the unemployment rate gap and the participation rate gap. The relationship between the two variables is quite different. The participation rate gap is also moderately negatively correlated with the unemployment rate gap, but the cor-

Chart 7
Correlation of the Unemployment Rate Gap and the LFPR Gap



Note: The unemployment rate gap is calculated as the CBO noncyclical unemployment rate subtracted from the unemployment rate. The LFPR gap is calculated as the LFPR trend from Aaronson et al. (2014) subtracted from the LFPR. All variables are logged.
Source: Bureau of Labor Statistics, Current Population Survey, Congressional Budget Office and author's calculations.

relation is not contemporaneous. When the unemployment rate gap is at its peak, the participation rate is being held down—there is a negative correlation. But four quarters later, the correlation between the LFPR at that time and the unemployment rate at its peak at time zero is stronger. The reason for this is that in making decisions about their labor force participation, people make decisions that take time to execute—like applying to school or rearranging their finances to stay home with the kids. And once these steps are taken, the decisions are sticky. Once you are in school you stay there until you complete your degree, or you stay home with your children until they are old enough for pre-school. So the drag to participation from a decline in demand persists even after labor market conditions have improved. In fact, in this chart, even 16 quarters after the unemployment rate gap peaks the participation rate is still being held down. These basic correlations are consistent with studies that use more complex statistical analysis to examine these relationships. In particular, a number of papers have found lags in the participation rate of up to four years, including Hobijn and Şahin (2021) and Cajner et al. (2021). The

long lags mean that policy makers looking for an upturn in the participation rate after a recession have to be patient.

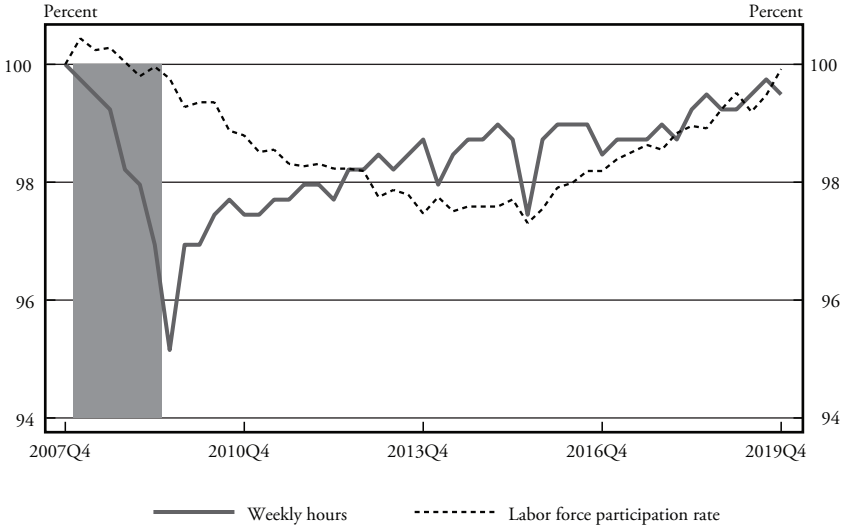
A fifth point that I want to make is that central bankers, at least in the U.S., have not been ignoring the workweek in their efforts to understand the business cycle.

Indeed, American policy makers have focused a considerable amount of attention on the share of workers who work part time for economic reasons, a variable that is also found in the CPS. The advantage of this measure is that it is a self-reported measure of slack, and it is not subject to changes in composition, which can affect the workweek over the course of the business cycle. In fact, the cyclical component of the number of people working part time for economic reasons is more highly correlated with the unemployment rate gap than either the workweek gap or the participation rate gap.

Let me end with some final takeaways. As policy makers sort through the onslaught of data they receive each month, they need to focus on variables that have the most signal for the state of the economy. In the U.S., this is the unemployment rate. Of course, improvements in the participation rate and workweek are very important for individuals who benefit, but the workweek and LFPR have less signal about the current state of the economy and they contribute less to changes in slack over the course of the cycle. Note that these findings for the U.S. may not be broadly applicable to other countries. For instance, in some European countries the workweek may adjust more than in the U.S. over the course of the business cycle due to a greater use of job sharing, and the unemployment rate may adjust less, which could change the analysis.

Chart 8 shows the path of the workweek and the participation rate for prime-age workers in the U.S. over the course of the Great Recession and recovery. I focus on prime-age workers to abstract somewhat from the aging of the population, which has been pushing participation down. The variables are indexed to equal 100 at the business cycle peak just preceding. The workweek declined significantly during the recession and then rebounded quickly, after which it continued to rise as the economy expanded. In contrast, the participation rate actually rose a bit at the start of the recession and fell very gradually,

Chart 8
The Evolution of the Workweek and Prime-Age Participation after the Great Recession



Note: Index 2007Q4=100.
Source: Bureau of Labor Statistics, Current Population Survey and author's calculations.

only beginning to rise about seven years after the end of the recession. By late 2019, the LFPR for prime-age workers reached its pre-Great Recession level.

This graph is fundamentally a picture of policy success—the power of the Federal Open Market Committee's (FOMC) new framework, although it wasn't formally in place for much of the time. Given the low-inflation environment, the decision of the FOMC not to put brakes on the economy, even as the unemployment rate fell to historically low levels, brought real improvements in participation and the workweek that benefited many workers and families and reduced labor market disparities (Aaronson et al. 2019). But reaping these benefits required a stable macroeconomic environment because it took a long time, particularly for the participation rate, to respond.

In thinking about the situation in which we find ourselves now, we have to take into consideration the macroeconomic environment and what we understand about the cyclical behavior of the unemployment rate, workweek, and participation rate, as I have reviewed here. We also have to be cognizant of the possibility that the pandemic

induced changes to the LFPR beyond those associated with the cycle. Thinking about this in the framework of the authors' model, the pandemic introduced additional fixed costs for certain people who might otherwise want to enter the labor force. For instance, it could have added health concerns or changes in dependent care-giving responsibilities. The pandemic also provided a shock that may have induced some people who would otherwise be working to move out of the labor force—in a sense it reduced inertia or a fixed cost of leaving the labor force.

As we look for more improvement in the LFPR going forward, we should be aware that some of the declines that occurred during the pandemic may have very long-lasting effects—beyond even the typically long lags it takes for participation to respond cyclically. And the workweek could also be affected, both because the pandemic may have driven changes in the composition of the labor force, which feed through to the workweek as in the authors' model, and because the pandemic may have changed people's views about how much they want to work. Unfortunately, economists have trouble identifying these types of shocks to fixed costs and preferences.

Author's Note: The author would like to thank Janina Bröker for excellent research support and Gianni Amisano and the staff of the Current Macroeconomic Conditions section of the Federal Reserve Board for providing their model decomposition of the output gap. David Wessel and Louise Sheiner provided helpful comments. The views expressed here are my own and do not necessarily reflect the views of other staff members, officers, or trustees of the Brookings Institution.

Endnotes

[1]Of course, there could also be other explanations for the fact that marginal entrants into the labor force work fewer hours, including, as pointed out by Valerie Ramey at the conference, joint labor supply decisions by households. However, these models, by themselves, can't explain the rise in female labor force participation.

[2]The workweek in the CPS is not conceptually the same as that from the Current Establishment Survey, which forms the basis for the measure of hours the BLS uses to calculate productivity, since it captures the average workweek per worker as opposed to the average workweek per job. See Aaronson and Figura (2010) for a comparison.

[3]The European labor force participation rate is calculated as a simple average of the participation rates in following countries: Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden

[4]The results are similar if you use an Hoderick-Prescott filter to detrend the workweek, but the cyclical movements look even smaller, using typical smoothing parameters.

[5]The trend shown extrapolates the participation rate of the last 15 cohorts.

[6]The model is a revamped and updated version of the model in Fleischman and Roberts (2011) maintained by the Current Macroeconomic Conditions section.

References

Aaronson, Stephanie, Mary C. Daly, William L. Wascher, and David W. Wilcox, 2019, "Okun Revisited, Who Benefits Most from a Strong Economy?" *Brookings Papers on Economic Activity* Spring: 333–404.

Aaronson, Stephanie, and Andrew Figura. 2010. "How Biased are Measures of Cyclical Movements in Productivity an Hours?" *Review of Income and Wealth* 56, issue 3: 39–558.

Aaronson, Stephanie, Tomaz Cajner, Bruce Fallick, Felix Galbis-Reig, Christopher Smith, and William Wascher. 2014. "Labor Force Participation: Recent Developments and Future Prospects." *Brookings Papers on Economic Activity* Fall: 197–275.

Blundell, R, and T MaCurdy. 1999. "Labour Supply: A Review of Alternative Approaches." In *Handbook of Labor Economics*, edited by O. Ashenfelter and D. Card: 1559–695. Elsevier Science B.V: North Holland.

Borowczyk-Martins, Daniel, and Etienne Lalé. 2019. "Employment Adjustment and Part-Time Work: Lessons from the United States and the United Kingdom." *American Economic Journal: Macroeconomics*, 11 (1): 389–435.

Cajner, Tomaz and John M. Coglianese, and Joshua Montes. 2021. "The Long-Lived Cyclicality of the Labor Force Participation Rate," *FEDS Working Paper* No. 2021–47. *http://dx.doi.org/10.17016/FEDS.2021.047*

Cogan, John F. 1981. "Fixed Costs and Labor Supply." *Econometrica* 49, no. 4: 945–63. *https://doi.org/10.2307/1912512*

Fernald, John, Robert Hall, James Stock, and Mark Watson. 2017. "The Disappointing Recovery of Output after 2009." *Brookings Papers on Economic Activity*: 1–58. *http://www.jstor.org/stable/90013167*

Fleischman, Charles A. and John M. Roberts. 2011. "From Many Series, One Cycle: Improved Estimates of the Business Cycle from a Multivariate Unobserved Components Model." *FEDS Working Paper* No. 2011–46. *http://dx.doi.org/10.2139/ssrn.1957379*

Hausman, Jerry. 1980. "The Effect of Wages, Taxes, and Fixed Costs on Women's Labor Force Participation." *Econometric Studies in Public Finance*: 161-194. National Bureau of Economic Research, Inc., *https://EconPapers.repec.org/RePEc:nbr:nberch:8973*

Hobijn, Bart and Sahin, Aysegul. 2021. "Maximum Employment and the Participation Cycle" *NBER Working Paper* No. w29222. *https://ssrn.com/abstract=3922496*

Jones, Kelly 2021. "At a Crossroads: The impact of abortion access on future economic outcomes," Working Papers 2021–02, American University, Department of Economics. *https://ideas.repec.org/p/amu/wpaper/2021-02.html*

Llosa, Luis-Gonzalo, Lee Ohanian, Andrea Raffo, and Richard Rogerson. 2014. "Firing Costs and Labor Market Fluctuations: A Cross-Country Analysis," No. 533, 2014 Meeting Papers, Society for Economic Dynamics.

Myers, Caitlyn Knowles. 2017. "The Power of Abortion Policy: Reexamining the Effects of Young Women's Access to Reproductive Control." *Journal of Political Economy*, 125(6): 2178–2224.

Ohanian, Lee E. and Andrea Raffo. 2012. "Aggregate hours worked in OECD countries: New measurement and implications for business cycles," *Journal of Monetary Economics*, Elsevier, vol. 59(1): 40–56.

Olivetti, Claudia, and Barbara Petrongolo. 2017. "The Economic Consequences of Family Policies: Lessons from a Century of Legislation in High-Income Countries." *Journal of Economic Perspectives*, 31 (1): 205–30.

Thévenon, Olivier. 2013. "Drivers of Female Labour Force Participation in the OECD," *OECD Social, Employment and Migration Working Papers* 145, OECD Publishing. *https://ideas.repec.org/p/oec/elsaab/145-en.html*