Hutchins Center
on Fiscal & Monetary Policy
at BROOKINGS

MARCH 2024

The U.S. Labor Market Post-Covid:

What's Changed, and What Hasn't?

Louise Sheiner

David Wessel

Elijah Asdourian

HUTCHINS CENTER ON FISCAL AND MONETARY POLICY
THE BROOKINGS INSTITUTION

This report and underlying data are available online at:
https://www.brookings.edu/articles/the-u-s-labor-market-post-covid-whats-changed-and-what-hasnt

The Brookings Institution is financed through the support of a diverse array of foundations, corporations, governments, individuals, as well as an endowment. A list of donors can be found in our annual reports published online here. The findings, interpretations, and conclusions in this report are solely those of its author(s) and are not influenced by any donation.

Introduction

In January 2024, the Hutchins Center on Fiscal and Monetary Policy at Brookings convened about 40 leading labor economists from academia, think tanks, and the Federal Reserve to discuss the evolution of the labor market since the start of the COVID-19 pandemic and to identify areas of agreement and disagreement. The day was broken into four 90-minute sessions, each focusing on a different topic relating to the labor market. At the top of each session, one or two economists with expertise on that topic gave short "firestarter" presentations. For the rest of the session, participating economists discussed the topics, often referring to their own research.

The onset of the COVID pandemic was a severe shock to the U.S. economy. Unemployment reached 14.8% in April 2020, the highest since the government began measuring it in 1948, while the labor force participation rate dropped to 60.1%, the lowest since the 1970s. By 2022, the labor market had rebounded, but inflation was growing at the fastest pace since the mid-1980s. When the conference was held in mid-January 2024, inflation had eased (though it was still above the Fed's 2% target), and unemployment had fallen to its pre-COVID level.

Our goal was to find answers, even if preliminary, to some key questions. What lessons should policymakers take from this unusual period? What caused inflation to spike in the wake of the pandemic and then to subside without an increase in unemployment? What lasting impact, if any, will the pandemic have on U.S. labor markets? Here is a summary of the conference, which was supported by the Smith Richardson Foundation.

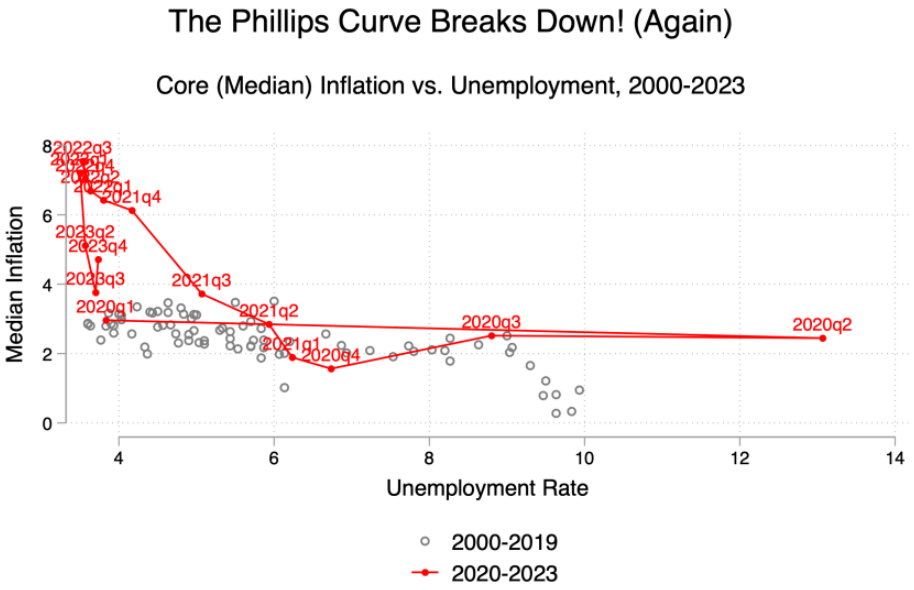
What is the best measure of labor market slack?

Labor market slack is a measure of the gap between employers' demand for labor and the available supply of labor. In general, the more slack in the labor market, the less upward pressure on prices and wages. Measuring labor market slack and understanding its role in pushing inflation up or down are important factors in Federal Reserve decision-making on interest rates.

Before 2019, the unemployment rate was widely regarded to be an adequate measure of labor market slack, largely because it closely tracked other measures of slack like the ratio of vacancies to unemployed workers (V/U) and quit rates, measures that that Bureau of Labor Statistics reports in its monthly Job Openings and Labor Turnover Survey. Many economists are no longer confident about the adequacy of the unemployment rate as the only important measure. Although unemployment in 2023 was at about the same level as it was in 2019, other measures of slack suggested that the labor market was much tighter.

Conference participants agreed that additional measures of labor market slack need to be considered, but disagreed on which measures were most useful. Laurence Ball of Johns Hopkins and others argued that V/U was the best measure of slack during the pandemic. They noted that is theoretically the best measure of labor market tightness because it captures imbalances between the demand for workers, as measured by vacancies, and the supply of people to fill them, as measured by the unemployment rate. In addition, they argue that V/U worked best as an inflation gauge during the pandemic period: While unemployment both pre- and post-pandemic has hovered around 3.5%, V/U peaked in March 2022, while inflation was soaring, as demonstrated in the charts below.

The top chart plots the unemployment rate against the median core inflation rate for each quarter since 2000—the standard Phillips Curve chart. The last three years of data (in red) broke the 2000-2019 trend, as inflation dropped from nearly 8% in mid-2022 to around 4% in mid-2023, while unemployment stayed roughly unchanged. In the bottom chart, inflation is plotted against V/U instead. On this graph, the 2000-2019 trend appears unbroken, and the record-high values of V/U indicating labor market tightness in 2022 and 2023 occur during the highest inflation in decades. These two charts suggest that V/U are a better measure of labor market slack.



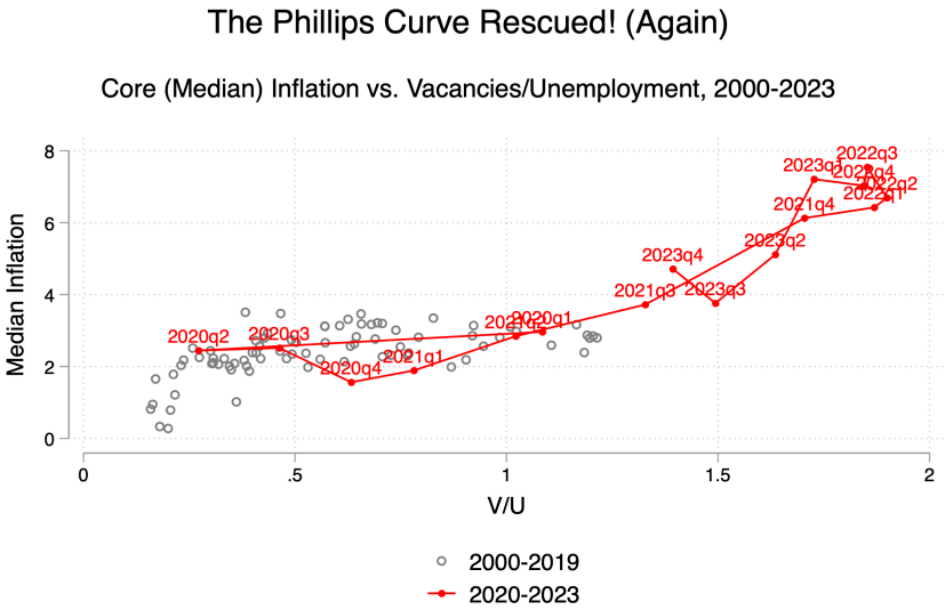


Chart courtesy of [Laurence Ball](), Johns Hopkins University

Other participants argued against relying on V/U, largely because of skepticism about the reliability of the vacancy measure. Julia Coronado of MacroPolicy Perspectives and others pointed out that the recent rise in V/U is hard to separate from the upward trend in vacancies that began around 2008. Erica Groshen, former commissioner of the Bureau of Labor Statistics, said that vacancies are increasing across the board because digital technology makes vacancies much easier to post. "When I applied to colleges, my high school told us, 'You can apply to five colleges,'" she remarked. "...My kids were told 12 colleges, because it was electronic, and I think the next generation is being told something like 20." Without accounting for the long-term increase in vacancies, V/U's detractors argued that the data as is could not inform the ongoing conversation about labor market tightness. Coronado argued that a combination of the unemployment rate, the employment-to-population ratio of the prime-age workforce, and the number of unemployment claims filed each month was a much more reliable indicator of labor market slack.

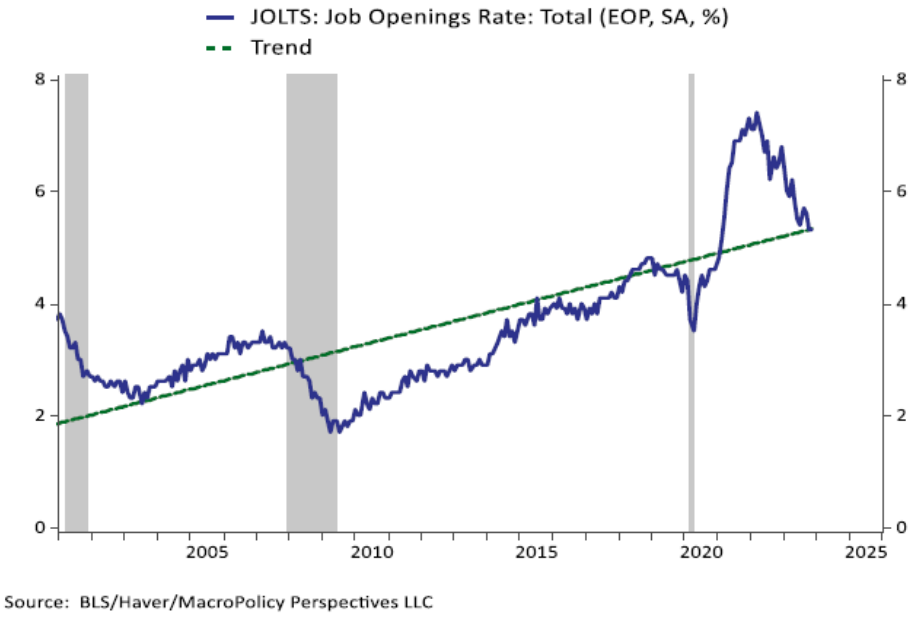


Chart courtesy of Julia Coronado, MacroPolicy Perspectives

Is measuring slack important for understanding inflation?

The Phillips Curve, which plots the tradeoff between unemployment and inflation, rests on the assumption that unemployment is a reliable measure of labor market slack. However, even without agreement on a measure of labor market slack, there is still question about whether the intuition behind the Phillips Curve—that there is a tradeoff between slack and inflation—is still applicable. This question has large implications for how the Federal Reserve handles its dual mandate to pursue price stability—which it defines as 2% inflation—and maximum employment.

Coronado argued that the stakes of this debate are high. She said using the tradeoffs between inflation and slack to determine macroeconomic policy is "dangerously misleading" because it increases the likelihood that the U.S. "miss[es] out on a whole lot of employment." While many agreed that deliberately and

unnecessarily restraining employment is undesirable, few were as willing to dismiss the relationship between inflation and slack. Don Kohn, former vice chair of the Federal Reserve Board, countered that "you can't just keep pushing and pushing and never get prices up." He argued that the two sides of the Fed's dual mandate should feed into one another, with maximum employment being redefined as "the highest level of employment consistent with price stability." Most at the conference fell somewhere between Coronado and Kohn, concerned with the current measure of vacancies and thus reluctant to use it as a principal indicator of slack, but still fundamentally agree that a very hot economy with very little labor market slack can cause inflation and require the Fed to raise interest rates to bring inflation down.

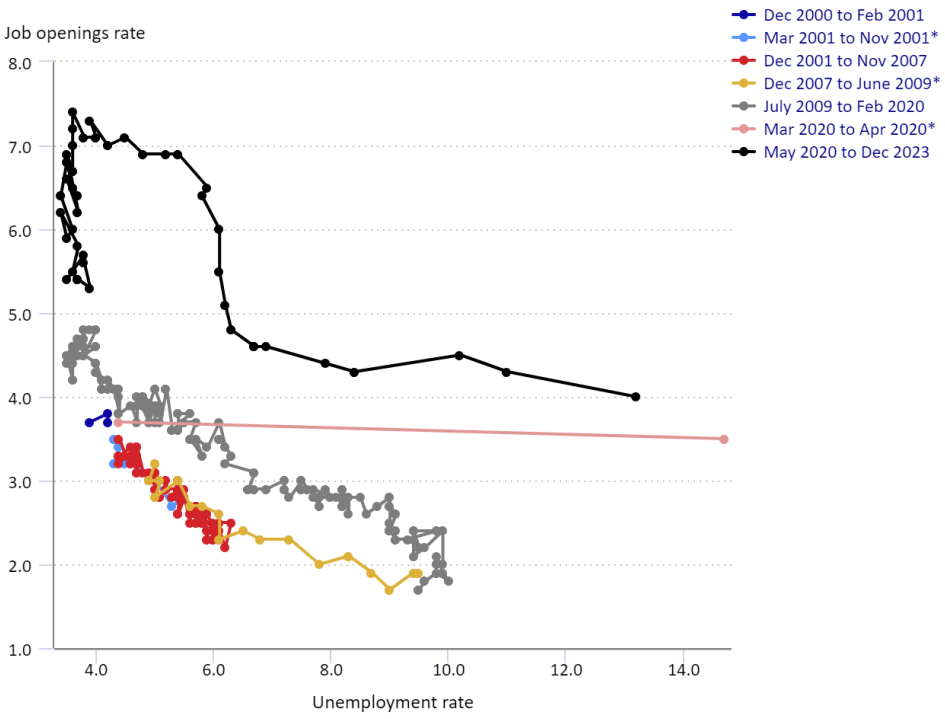
What has happened to the Beveridge Curve since 2020?

The Beveridge Curve charts the number of job postings (as a percentage of all filled and unfilled jobs) against the unemployment rate.

It moved up and to the right during the pandemic. That is, there were more vacancies at any given unemployment rate, suggesting increased inefficiency in the labor market as available workers weren't being matched to available jobs. The chart below shows the movement of the Beveridge Curve during the 2000-2024 period: It shifted out and to the right after the Great Recession, and then shifted out much more notably during the pandemic. The curve began shifting back to its pre-pandemic level in March 2022, as vacancies declined without much change in the unemployment rate.

The Beveridge Curve (job openings rate vs. unemployment rate), seasonally adjusted

Click and drag within the chart to zoom in on time periods



ɔurce: U.S. Bureau of Labor Statistics.

What happened during the pandemic that raised vacancies so much relative to unemployment? Aysegul Sahin of the University of Texas pointed out that quits surged during the pandemic, which temporarily increased the level of job-to-job transitions. Anton Cheremukhin of the Dallas Federal Reserve referenced work he published in late 2022 showing that vacancies that are filled by people looking for work are different than those filled by poaching people from different firms. He argued that the share of "poaching vacancies" increased substantially over the past decade, while vacancies filled by unemployed workers remained low. Justin Bloesch of Cornell's School of Industrial and Labor Relations also argued that there was probably a temporary increase in matching inefficiency during the pandemic which has since faded, but reiterated concerns about interpreting increases in the vacancy rate because of its upward trend.

Do rising wages suggest that the fight against inflation isn't over?

Rapid nominal wage growth post-COVID has led many to argue that inflation is caused by rising wages. At the conference, almost everyone agreed that wage inflation follows price inflation, rather than causing it. Adam Shapiro of the San Francisco Federal Reserve showed that price inflation is more correlated with future wage inflation than it is with past wage inflation. Shapiro noted that prices are typically more flexible than wages, so when prices surge quickly, wages take time to catch up. On the flip side, when wages rise quickly, prices of non-housing services do rise, but Shapiro finds that the effects are quite small—he said that a 1% increase in wages increased inflation by just 0.15 percentage point, and that the increase occurred gradually over a period of four years.

Steven Davis of the Hoover Institution at Stanford University argued that the shift to remote work makes the post-pandemic period different from previous cycles. The ability to work from home provides workers with non-pecuniary benefits, reducing the pressure on wages. Davis points to the particularly rapid growth in wages at the bottom of the wage distribution—largely for occupations for which remote work is not an option—as evidence of this phenomenon.

Kohn expressed surprise at the finding that wages lag prices. "I have tended to look at wage increases as an indicator of pressure on labor markets," he said, continuing that acting upon that information by easing monetary policy while wages were still growing quickly would be a "gutsy move" by the Fed. Shapiro argued that the likelihood of a wage-price spiral is small. Further, Shapiro said that, in a situation where wage inflation follows price inflation by a few quarters, analysts should look more to key labor market indicators like unemployment and quits to see if the fight against inflation is succeeding than to wage growth itself, which would be expected to remain high for a few quarters after price inflation recedes.

Will pandemic-era wage gains for low-income workers endure?

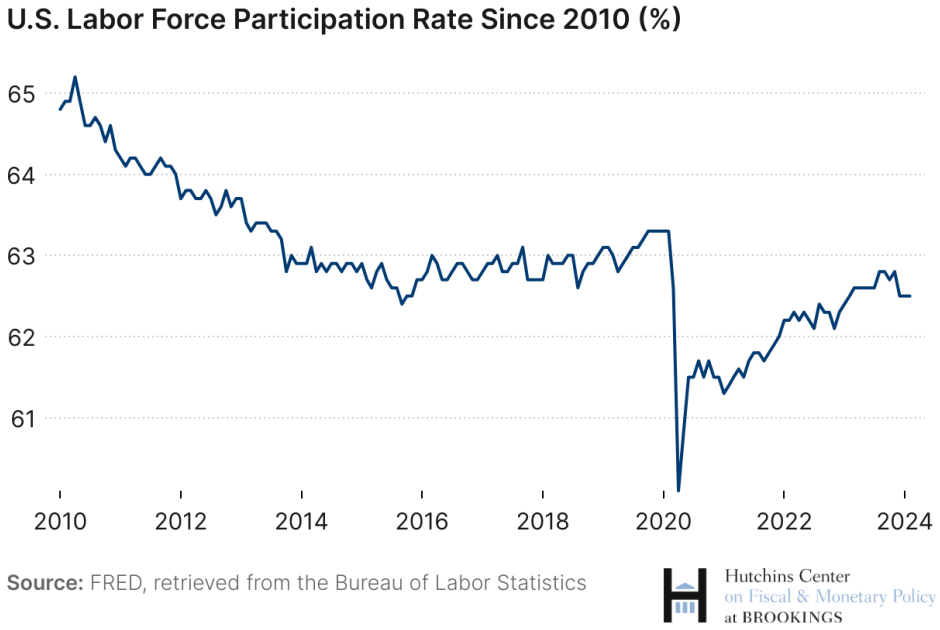
After decades of growing wage inequality, the post-pandemic period has seen a substantial decrease in earnings dispersion between the 10th and 90th percentiles. However, participants noted that this reduced inequality is confined to those at the very bottom: Workers at the median of the earnings distribution, who have also been losing ground relative to the top decile for decades, have not seen gains post-pandemic.

Participants noted that, in typical business cycles, low-wage employees experience higher earnings when the economy is strong because they work more hours, not because their wages increase, making the wage compression during the COVID episode atypical. Still, participants at the conference were pessimistic about the durability of these relative wage gains in coming years, especially if the federal minimum wage remains low. However, some pointed to increasing state minimum wages as a factor that could help cement the gains seen in recent years, noting that many states have chosen to index their minimum wages to inflation.

Some argued that COVID-era wage compression is not as dramatic as it first appears. Brad Hershbein of the Upjohn Institute noted that while wages have grown fastest for very low-wage workers, inflation has likely grown fastest for them as well, because they are more likely to spend a high proportion of their income on goods whose prices have risen the most since COVID-19. Steven Davis showed charts using data from the Atlanta Federal Reserve Wage Growth Tracker and the Employment Cost Index, published by the Bureau of Labor Statistics, in which inflation-adjusted compensation is, if anything, a little below its pre-pandemic level. Other economists took issue with the specific measures he chose and insisted the picture was less pessimistic. More generally, the participants agreed that using different measures of inflation and wages can significantly change one's findings about the trends in real wages growth in recent years.

Weak wage growth across the board despite a tight post-pandemic job market puzzled many in the room. Ball hypothesized that goods whose prices increased due to supply shocks may have fed into inflation without putting upward pressure on wages. Some reiterated that the real wage declines could be partially explained by the non-pecuniary benefits offered to workers through remote work. Others pointed out that the labor market may not be as tight as suggested by recent increases in payroll growth because a surge in immigration has increased labor supply in the past two years.

What happened to labor force participation during the pandemic?



The beginning of the COVID-19 pandemic brought large declines in LFP—the fraction of adults working or looking for work—across the board, from 63.3% in January 2020 to 60.1% in April 2020. Aysegul Sahin noted the decreases in LFP at the start of the pandemic were a natural consequence of the rise in unemployment, because workers drop out of the labor force much more frequently when they are unemployed than when they have jobs.

The decrease in labor force participation was not equally distributed. Nicolas Petrosky-Nadeau of the San Francisco Federal Reserve showed that, during this period, mothers' LFP fell more than fathers' did. Aysegul Sahin noted that participation among workers 55 and older declined. Though the largest losses in participation from the pandemic were temporary, Petrosky-Nadeau noted there was concern that the pandemic might have led non-college-educated older workers to permanently leave the labor force.

Labor force participation has increased sharply since the beginning of the pandemic—up two percentage points from its low in April 2020. Petrosky-Nadeau noted that in the years after the pandemic, the gap that expanded between mothers' and fathers' LFP has reversed and become smaller than pre-pandemic. The wider gap between college and non-college-educated adults, on the other hand, has persisted. Additionally, Sahin showed that, while current LFP is a percentage point lower than it was in February 2020, it is at the top of the range of pre-pandemic forecasts because economists were already predicting declines in LFP due to population aging.

Wendy Edelberg of the Hamilton Project at Brookings noted there had been a clear uptick in retirements, but that it was unclear whether those were the result of fear of COVID itself or the result of wealth effects from older workers whose house values and stock prices skyrocketed post-COVID.

In sum, much of the sudden loss in LFP during COVID has been recovered, though the composition of the labor force is somewhat different than expected, with prime-age LFP exceeding pre-pandemic expectations, and 55+ LFP still below pre-pandemic trends.

Will labor force participation increase going forward? How much further can tight labor markets boost participation?

Though the declines in LFP during the pandemic have reversed, the trend in labor force participation is likely to be down, largely due to population aging. Aysegul Sahin also noted that the large baby boom cohort has had particularly strong LFP compared to the cohorts before and after them. As they retire, it is unlikely that younger cohorts will participate as much, leading to further LFP declines.

Participants were largely skeptical that tighter labor markets could boost LFP much higher than its current levels. Aysegul Sahin and others asserted that there's little reason to think that the business cycle will further improve LFP because the labor market is already very tight. Others pointed out that in the strongest business cycles, the participation rate gets three-quarters of a percentage point above trend, which by itself is unlikely to reverse the long-term decline.

Sahin argued that workers drop out of the labor force much more frequently when they are unemployed than when they have jobs, so even the short-lived increase in unemployment during 2020 is likely to have taken more people out of the labor force than otherwise would have left. She noted that, on the flip side, LFP increases are unlikely to come from those who have already dropped out of the labor force: "Recovery of participation rates for all groups is not because marginalized workers are drawn back into the labor force, but instead because those in the labor force become more attached due to better labor market opportunities and more employment stability," she said.

While the economists at the conference were pessimistic about halting or reversing declines in LFP with monetary policy alone, three structural factors were repeatedly mentioned as possible solutions. First, Harry Holzer of Georgetown argued that maintaining a steady influx of immigrants was crucial for boosting LFP (because immigrants are more likely to be in the labor force than natives). Second, there was agreement that lack of childcare keeps many women out of the labor force. Third, there was consensus that a lack of well-paying jobs for non-college-educated men was lowering LFP. Because these factors are not cyclical, but rather long-term challenges which are suppressing LFP and could be addressed through government policy, participants were optimistic about LFP breaking its negative trend only if those problems were remedied.

How will remote and hybrid work affect labor force participation?

There was substantial optimism among participants that remote work would boost LFP. Steven Davis argued that the rise in remote work increases labor market opportunities for workers with both mental and physical disabilities for whom daily commuting is either very difficult or infeasible, although Louise Sheiner pointed out that the rise actually observed in LFP for people with disabilities likely reflects a composition effect from the increase in people with disabilities from long COVID, rather than an increase in participation due to remote work. Workers with caretaking responsibilities, either for children or older family members, also benefit from the amenity values of staying at home and increased schedule flexibility. As a result, added flexibility from remote work has the potential to bring segments of the American population whose LFP is weaker than the national average into the labor market.

More broadly, economists noted that remote work is seen as a perk by a substantial portion of the existing labor force, mentioning that some companies have started rewarding employees who are required to come in because they recognize that those employees are sacrificing the amenity value of working from home. Across countries, workers report using 40% of their saved time from commuting and grooming for work, another 40% to childcare, and the last 20% for leisure.

How common is remote work, and is it here to stay?

There was consensus that remote work is likely to remain much more common than it was before the pandemic. In 2019, about 7% of workdays were remote. As shown in the chart below, presented by Steven Davis, remote work skyrocketed during the pandemic, with remote work accounting for 60% full-time equivalent days in May 2020. By the end of 2020, that number was down to 37%, and continued falling in 2021 and 2022 as vaccines were made available to the public and businesses reopened. By the start of 2023, remote work accounted for about 28% of full-time equivalent hours, where it has stayed. However, Davis noted that while the trends in remote work remain the same across surveys, the percentage of hours worked remotely differs, with 28% on the high end and 15% on the low end. (Data is drawn from the Survey of Working Arrangements and Attitudes, or SWAA, conducted by WFH Research, and from the Census Household Pulse Survey.)

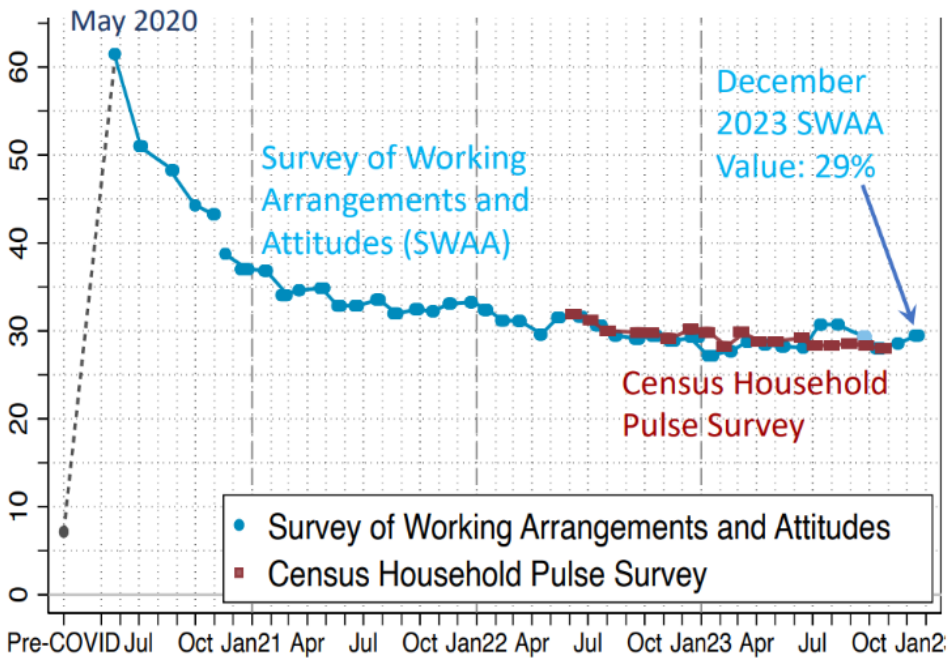
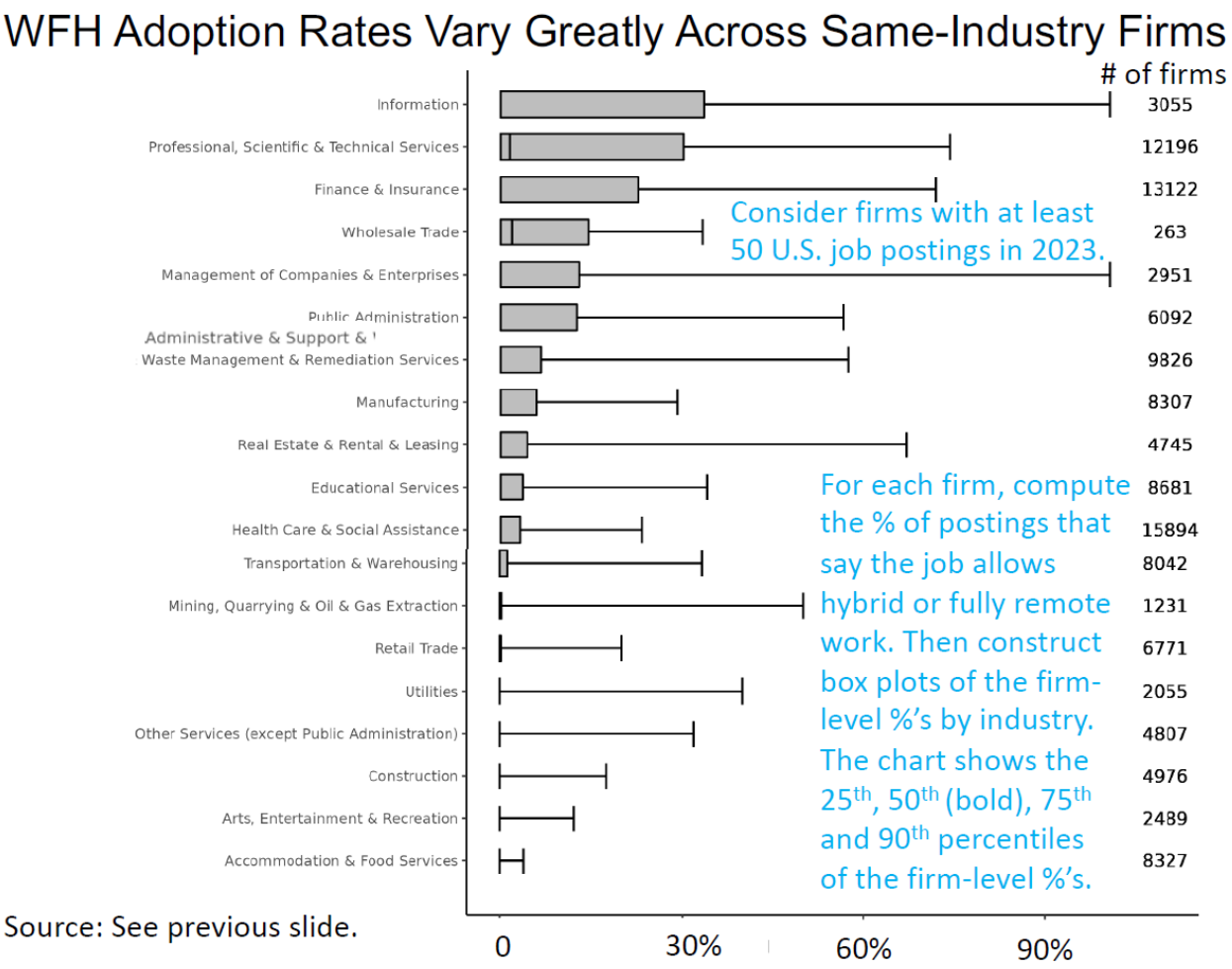


Chart courtesy of [Steven Davis](), Hoover Institution at Stanford University

Still, recent data show no sign that the frequency of remote work is returning to pre-pandemic levels. Davis also presented results from a survey of business executives who expected work from home to rise slightly by the end of the decade, suggesting that firms see hybrid work as a viable long-term option.

The prevalence of remote work varies widely across cities. For example, the proportion of job postings offering remote options in San Francisco is nearly ten times higher than the proportion offering remote work in Miami Beach. This heterogeneity also applies across and within industries. As shown in the chart below, highly computerized sectors like information and professional services frequently offer remote work, while physical jobs like construction and food services hardly offer any. However, the variation within industries is wide: The chart below shows that at least 25% of information firms post no remote offerings, while at least 10% of information firms make every job posting remote-optional. These results reflect the wide variety of opinions American employees and employers hold about hybrid and remote work. Even within industries, workers are coming to different decisions about whether they want to work remotely, hybrid, or in person in the post-COVID era. In industries whose work can be done without coming into the office, firms are catering to different types of employees by sorting themselves along a continuum, from fully remote to fully in person.



Source: See previous slide.

Chart courtesy of Steven Davis

How does remote work affect productivity?

Research presented at the conference showed mixed results about the effects of remote and hybrid work on productivity. In a presentation that summarized the findings from many papers, including some of her own at the New York Federal Reserve, Natalia Emanuel said that the effects of remote work on productivity depend partially on whether a job is typically done alone or collaboratively, whether workers are trained remotely or in person, whether workers coordinate when they come into work, and whether a job is completely remote or hybrid.

The research discussed found that productivity decreases were common but not universal among jobs that went fully remote. Productivity decreased at a tech firm in India where software engineers spent more time in meetings and less time working in "flow state" after the shift to remote work. 911 responders who answered calls remotely did so less efficiently. At Microsoft, comments on code during on-the-job training were already higher for teams that worked together in the same building, and the number of comments decreased substantially after the switch to remote work. Senior engineers, however, produced more programs per month, as they spent less time training new hires.

Hybrid work was more likely to improve productivity than fully remote work. After a travel agency instituted an opt-in hybrid work policy which required workers to have a good home office, workers both worked more hours and worked more efficiently. Staffers at a patent office also became more productive when given a hybrid option after two years of working in person. Emanuel noted that the work done by these workers was largely done solo, which was conducive to remote work.

Davis argued that productivity can be negative when firms first adopt remote work, because it takes time for businesses and workers to learn to work remotely in an efficient manner. He pointed to a paper by Emanuel that showed much smaller negative productivity effects of the shift to remote work during the pandemic for a Fortune 500 company that already partially shifted to remote work before the pandemic.

Emanuel pointed to a survey that showed that workers and firms assessed the effect of remote work on productivity differently: The average worker thinks they are more productive at home, while the average employer thinks the opposite. Louise Sheiner of the Hutchins Center at Brookings pointed out that workers' saved personal time could explain this discrepancy. From the employer's perspective, workers are still clocking in and out at the same time, and thus any decrease in output looks like a decrease in productivity. From the worker's perspective, they have saved more than an hour commuting and getting ready to go to work, and so on an hourly basis workers may feel that even if they produce the same amount of work, they are doing more of it per hour of work/commuting time.

Though the findings were mixed, a few general takeaways emerged. Fully remote work seems to hurt productivity more than hybrid work, and effects are heterogeneous across. Experienced workers who opt to telework and whose work is largely individual fare better, sometimes even seeing productivity gains, while new hires who require training and workers who need to collaborate regularly at work see substantial productivity losses.

Next steps

Looking to the future, participants pointed to places where additional data and methodologies could fuel new research. Laurence Ball suggested finding a measure of effective vacancies to account for the change in how vacancies are posted. Nick Bunker suggested measuring the intentions of employed people to switch jobs, which is already done in other countries, to better understand how many workers are truly available to fill those vacancies. Participants disagreed about the trustworthiness of wages posted for online jobs, pointing to a need for better data, though some noted that there has been a recent surge in the proportion of online postings that give salary ranges. Steven Davis pointed to discrepancies across different measures of the prevalence of remote work, suggesting a need for a reconciliation between them. Lastly, Brad Hershbein said economists could use more data inputs to see which indicators predict labor markets best. He argued that tools like neural networks may do a better job predicting the future than current models, even if the theoretical reasons why have yet to be discovered, and that labor economists have yet to use the full capacities of data science to answer questions about the labor market.

The Recent Evolution of Labor Markets
A Hutchins Center Conference

January 17 and 18, 2024
The Brookings Institution

Participant List

Stephanie	Aaronson	*Federal Reserve Board*
Jim	Albrecht	*Georgetown University*
Eileen	Appelbaum	*Center for Economic and Policy Research*
Sadhika	Bagga	*Columbia Business School*
Martin	Baily	*Brookings Institution*
Laurence	Ball	*Johns Hopkins University*
Josh	Bivens	*Economic Policy Institute*
Justin	Bloesch	*Cornell University*
Nick	Bunker	*Indeed*
Anton	Cheremukhin	*Federal Reserve Bank of Dallas*
Julia	Coronado	*MacroPolicy Perspectives*
Steven	Davis	*Stanford University Hoover Institution*
Wendy	Edelberg	*Brookings Institution*
Natalia	Emanuel	*Federal Reserve Bank of New York*
Edward	Gamber	*Congressional Budget Office*
Erica	Groshen	*Cornell University School of Industrial and Labor Relations*
Brad	Hershbein	*W.E. Upjohn Institute for Employment Research*
Harry	Holzer	*Georgetown University/Brookings Institution*
Jeffrey	Kling	*Congressional Budget Office*
Donald	Kohn	*Brookings Institution*
Gian Maria	Milesi Ferretti	*Brookings Institution*
Joshua	Montes	*Federal Reserve Board*
Seth	Murray	*Federal Reserve Board*
Jaeger	Nelson	*Congressional Budget Office*
Xiaotong	Niu	*Congressional Budget Office*
Nicolas	Petrosky-Nadeau	*Federal Reserve Bank of San Francisco*
David	Ratner	*Council of Economic Advisers*
John	Roberts	*Evercore ISI*
Aysegul	Sahin	*University of Texas at Austin*
Matthijs	Schendstok	*US Treasury*
Adam	Shapiro	*Federal Reserve Bank of San Francisco*
Louise	Sheiner	*Brookings Institution*
Tara	Sinclair	*George Washington University/US Treasury*
Mark	Steinmeyer	*Smith Richardson Foundation*
Susan	Vroman	*Georgetown University*
Andrew	Weaver	*University of Illinois at Urbana-Champaign*
David	Wessel	*Brookings Institution*

The Recent Evolution of Labor Markets
A Hutchins Center Conference

January 17 and 18, 2024
The Brookings Institution

Wednesday, January 17

6:00 p.m. **Dinner (Speaker: Jared Bernstein, Chair, Council of Economic Advisers)**

Thursday, January 18

8:30 a.m. **Registration & Breakfast**

9:00 a.m. **Opening Remarks**

9:10 a.m. **Session 1: Measuring Labor Market Slack & the Beveridge Curve**
Firestarters:
Labor-Market Slack: Laurence Ball (Johns Hopkins University) and Julia Coronado (MacroPolicy Perspectives)
Beveridge Curve: Justin Bloesch (Cornell University) and Anton Cheremukhin (Federal Reserve Bank of Dallas)

10:30 a.m. **Break**

10:50 a.m. **Session 2: Trends in Labor Force Participation**
Firestarters: Nicolas Petrosky-Nadeau (Federal Reserve Bank of San Francisco) and Ayşegül Şahin (University of Texas at Austin)

11:50 a.m. **Lunch**

12:50 p.m. **Session 3: Wage-Price Spiral & Wage Compression**
Firestarters:
Wage-Price Spiral: Adam Shapiro (Federal Reserve Bank of San Francisco)
Wage Compression: Stephanie Aaronson (Federal Reserve Board)

2:10 p.m. **Break**

2:30 p.m. **Session 4: Trends in Remote Work**
Firestarters: Steven Davis (Hoover Institution) and Natalia Emanuel (Federal Reserve Bank of New York)

3:30 p.m. **Closing Remarks**

3:45 p.m. **Reception**

.

Hutchins Center
on Fiscal & Monetary Policy
at BROOKINGS

The mission of the Hutchins Center on Fiscal and Monetary Policy is to improve the quality and efficacy of fiscal and monetary policies and public understanding of them.

Questions about the research? Email ESMedia@brookings.edu.
Be sure to include the title of this paper in your inquiry.