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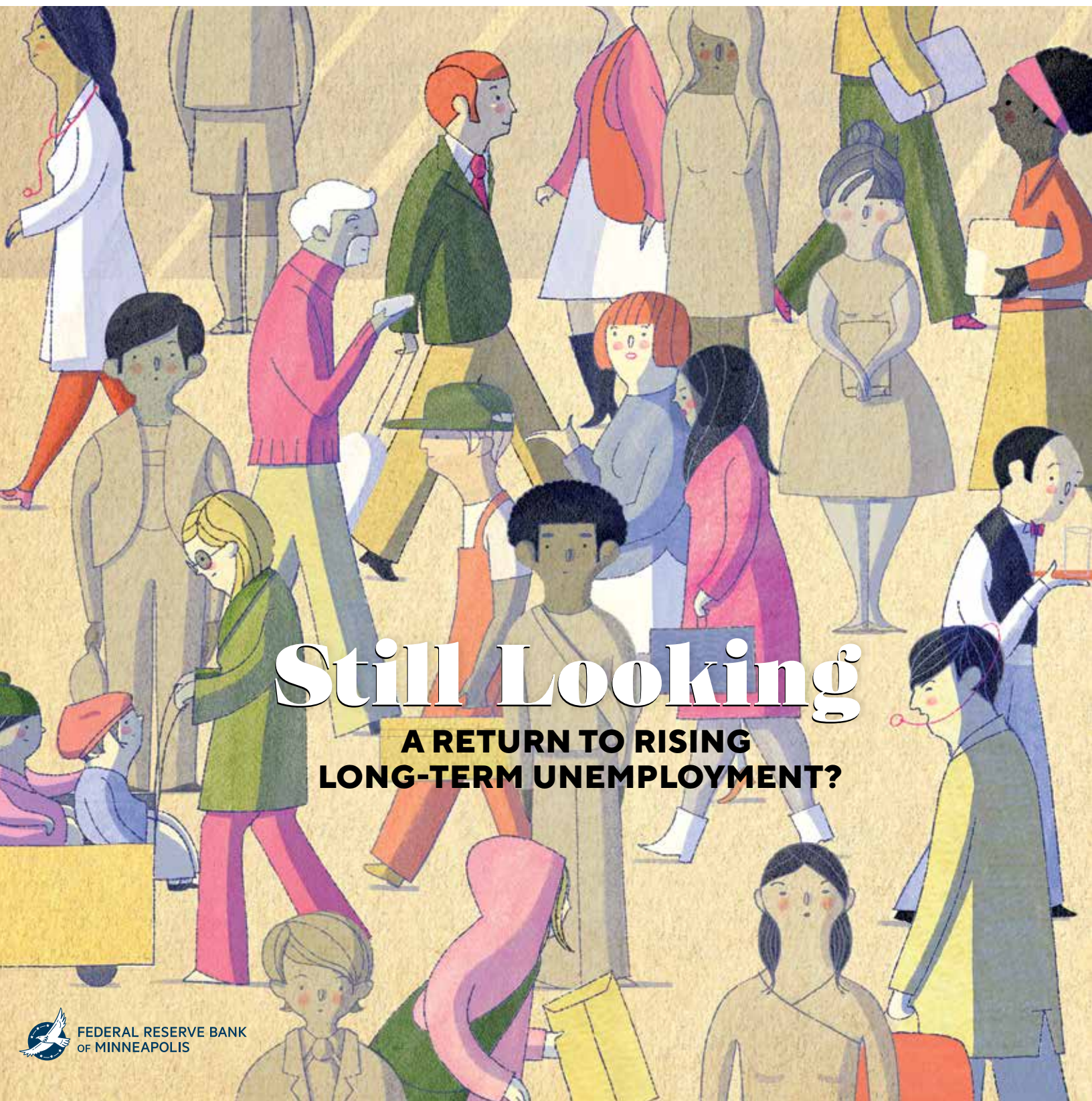
FALL 2025

INTERVIEW: Changing labor markets
keep Erik Hurst focused on how
we'll adjust in the long run

RESEARCH: Why the college
wage premium has stagnated

DATA DIVE: The journey to
long-term unemployment

THE MAGAZINE OF THE OPPORTUNITY & INCLUSIVE GROWTH INSTITUTE



Still Looking

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LONG-TERM UNEMPLOYMENT?**

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For All

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FROM THE
DIRECTOR

BY ABIGAIL WOZNIAK



Bringing the past into focus

IT HAS BEEN AN ACTIVE YEAR IN THE U.S. ECONOMY. Many have been watching for clues to the economy’s direction on an almost daily basis. That kind of vigilance is important in many sectors and of course at the Fed. But the drivers of economic opportunity and inclusive growth often only come into view over time. As a result, the Institute is particularly invested in taking the long view.

In this issue of *For All*, we take the long view on several trends characterizing the U.S. economy.

For decades, women’s participation in the labor market rose steadily, but this plateaued in the 1990s. How did this rise and eventual flattening affect the economy? Work by former Institute visitor Stefania Albanesi finds that the growing participation of women in the labor force contributed to faster employment recoveries following recessions. The stabilization of that rise resulted in slower employment recoveries, which has characterized most recessions since then and influenced policy responses.

In our cover article, Andrew Goodman-Bacon and I investigate long-term unemployment—both its recent movements and its longer history. We show that the rapid recovery of long-term unemployment to its current level is a departure from historic patterns, and we consider whether this severe form of unemployment might revert to its historic cycle going forward.

We also discuss the potential economic implications of AI over the long run with Institute advisor Erik Hurst and look at research by San Francisco Fed economists on why the college wage premium—one of the most striking examples of rising inequality—stopped rising after three decades of growth.

Analyses like these rely on data to compare our economy today with the past. This is best facilitated by professional researchers with a mission to collect and share comparable data and statistical information over time. This issue, as well as many of the resources on minneapolisfed.org/institute, show what we can learn from such data. Without them, the long view would quickly blur until it is unrecognizably out of focus. ★

Li Hurst

Getting face-to-face and “in the headspace”

Visiting scholars make the most of in-person work sessions with co-authors **BY LISA CAMNER MCKAY**

Economic research is often a slow, drawn-out process. It might take months, even years, from an idea's inception to the time a working paper is ready to share.

So anything that moves the needle on that timeline is valuable. One simple hack: in-person work sessions with co-authors. The lion's share of economic papers these days are co-authored. Indeed, 91 percent of the 620 working papers posted to the National Bureau of Economic Research website in the first six months of 2025 had two or more authors.

“It feels like you get months' worth of things done in days because you're in the headspace, you're right there with each other,” said Brigham Young University professor Emily Leslie. Leslie and her co-author Brittany Street, a professor at the University of Missouri, spent two weeks together in residence at the Minneapolis Fed in the spring of 2024 to analyze the effect of subsidized housing on formerly incarcerated individuals and their households. Coordinating co-author visits is one way in which the Institute's Visiting Scholar program facilitates research progress.

“It was a very opportune time for us because we had the first presentation coming up for the project we were working on together,” Street said. “We finished what we needed to do to submit it to the conference.”

This spring, another co-author group made a coordinated visit to the Institute. Kristy Buzard, Laura Gee, and Olga Stoddard had been researching together for years but had rarely met in person. They had a nearly complete project studying how often mothers versus fathers are called by school administrators, and that project had spawned more ideas related to the gender gap in the “invisible mental load” of managing a household and child care that they wanted to pursue.



Co-authors Kristy Buzard (Syracuse University), Olga Stoddard (Brigham Young University), and Laura Gee (Tufts University) outside the Minneapolis Fed during their visit.

PHOTO COURTESY OF OLGA STODDARD

“Because this was such a great opportunity to get feedback and work together, it gave us a commitment device to get the preliminary data together,” Buzard said. Buzard then presented this early-stage work at a seminar at the Minneapolis Fed, with Stoddard and Gee in the audience to capture comments and suggestions. “Then we just huddled up in one of the offices and cleared off the whiteboard and we mapped out the whole project,” Buzard said. “We planned the whole thing out in less than three hours. It was amazing.”

Zoom has its advantages, of course, enhancing many long-distance research partnerships. And yet, “it's really hard to overstate the benefit of being together in the same room, the synergy that is created by discussing ideas, by not being interrupted or distracted by other things,” Stoddard said.

“I'm a huge evangelist about working in person with your co-author team when you can,” Leslie said. “Everyone that I know who hasn't done it, I tell them, you should apply to [the Institute] with your co-authors and work on a project.” ★

Correction

In last issue's Institute Update, we misidentified an individual in a photo from the 2023 Institute Research Conference. The individual is Douglas Harris of Tulane University, not Michael Keane as stated in the caption.

SCHOLAR SPOTLIGHTS

The research community at the Institute includes visiting scholars, consultants, economists, research analysts, and research assistants. These scholars bring varied backgrounds, interests, and expertise to research that deepens our understanding of economic opportunity and inclusion as well as policies that work to improve both.

JOHN BAILEY JONES

Vice President of Microeconomic Analysis,
Federal Reserve Bank of Richmond

BRINGING ECONOMIC RIGOR TO LIFE'S “FUZZY STUFF”

In a Federal Reserve System dominated by macroeconomists, “the micro people are like a fire extinguisher,” said John Bailey Jones, head of microeconomic analysis at the Richmond Fed. “We may not be answering questions every six weeks” in the wings of Federal Open Market Committee meetings. “But there will be questions that are really important, where you need that in-house expertise.”



Jones, a member of the Institute's System Affiliates Board, describes his research specialty as “the fuzzy stuff”—bringing quantitative rigor to economic decisions often wrapped up with emotion, sentimentality, or tradition. “I just want to understand what makes people tick,” he said. “Trying to understand how that could be fitted to an economic framework isn't always easy, but it really fascinates me.”

There are plenty of emotions attached to decisions around money and assets as we get older. With frequent co-authors including Institute consultant Mariacristina De Nardi, Jones has worked to untangle aspects of the “retirement savings puzzle.” Why do retirees save more (and spend less) than classical economic models predict? Within the bigger puzzle, smaller questions arise, such as, Why do couples save differently than singles?

Jones' research has revealed, for example, how the desire to leave bequests for heirs interacts with the uncertainty of extreme end-of-life medical costs. Neither incentive alone can explain late-in-life saving behavior nearly as well as both together—any savings unneeded for medical care still has value as a bequest. This insight helps explain why few Americans have shown much interest in long-term care insurance (which does not pass to heirs if unused).

Jones' recent economic briefs for the Richmond Fed focus on the surge in older Americans aging in place—a decision both sentimental and financial, with implications that include tighter housing markets and lower labor mobility. As our aging society faces a reckoning with the fiscal solvency of Social Security and Medicare, Jones is thinking about incentives around work at older ages. “What would be the best ways to extend people's careers in a way that is not just simply imposing burdens on them? Is there a carrot-based way?”

On many topics Jones follows, the policy implications remain far from clear. “We're still at a point where we just need to understand how people are operating,” he said. “The point now is to do very rigorous work and nibble away—quantitatively, empirically, and grounded in solid economic theory.”

—Jeff Horwich

“I just want to understand what makes people tick. Trying to understand how that could be fitted to an economic framework isn't always easy.”

—John Bailey Jones

JACELLY CESPEDES

Assistant Professor of Finance, University of Minnesota
Carlson School of Management

LESSONS IN HOUSEHOLD FINANCE

When a nonfinance major steps into a Finance 101 class, that’s Jacelly Cespedes’ moment to shine.

“I have this romantic view that I can help,” said Cespedes. “Someone who is interested in marketing is probably not going to take another finance course, right? But if that person can understand the concept of compounding, Fed interest rates, the diversification concept—that is going to have a big effect on their financial decisions.”

This view is closely tied to Cespedes’ research passion: household finance. Cespedes knew she wanted to research the role of households in the economy after experiencing the 2008 financial crisis as an econ undergrad. Her next move, an MBA, would open her mind to a Ph.D. in finance.

The applied nature of finance drives her research agenda. For instance, research has shown that when given large sums of money (think lottery winners), households sometimes get into financial trouble. But Cespedes and her co-authors find that small business owners make rational business investments when faced with a “wealth shock.” Some invest in expansion. Some pivot to different industries that require higher startup capital but could offer higher margins. Others that have been less successful pivot to industries where they perform better. The research holds implications for policy on small business finance and barriers to entrepreneurship.

Of course, most households aren’t simply handed large sums of money—but they do apply for loans. Cespedes has explored how households interact with financial regulation, including the Community Reinvestment Act (CRA), a law enacted in 1977 to reduce inequality in lending.

For this project, Cespedes and her co-authors studied the effects of a CRA update in 1995 that eased the evaluation of banks below a \$250 million asset threshold and increased regulation of banks above the threshold.

This change distorted bank behavior: Some banks resorted to reducing growth and increasing loan rejection rates to avoid crossing the asset threshold. These reductions impacted lower-income households, small businesses, and innovation.

A second paper on the CRA found that when banks close branches to circumvent the regulation, nonbanks fill the void in the mortgage market. This trend does not extend to small business lending, however, where nonbanks cannot easily replicate the practice of relationship lending.

The research prompts urgent questions about how CRA rules may reshape the lending landscape, nudging credit activity toward nonbank mortgage companies that aren’t subject to the CRA.

—Danielle Cabot

YEWANDE OLAPADE

Economist, Supervision, Regulation, and Credit,
Federal Reserve Bank of Minneapolis

A FASCINATION WITH MONEY
ON THE MOVE

Yewande Olapade grew up amid banking and international economics, watching her father leave for work each day as an economist for a commercial bank in Nigeria. After studying economics in college, she similarly went to work in consumer and corporate operations for a bank in Lagos. “I wanted to understand how money gets transferred from one person to another,” Olapade said. “How does that translate to growth within the economy?”

As a Ph.D. student in the U.S., this curiosity translated into a focus on international trade. Olapade explored how lower trade barriers increase productivity and well-being in low-income countries, and how African firms can better capture the benefits of Africa’s continental free trade agreement. Her research on the 2018–2019 U.S.–China trade war assessed the welfare effects across U.S. states, including the impact of retaliation.

Olapade views the recent trade turmoil among global superpowers through the lens of her trade research on developing economies: “It is reasonable to conclude that when two elephants fight, some of the hens in the grass will suffer.”

Her trajectory as a trade economist changed when she took a job supporting the large bank “stress test” program at the Minneapolis Fed, validating the statistical models the Fed uses to see how banks could handle losses in different economic scenarios. The highly confidential data also poses a challenge for publishing publicly available research.

As an Institute visiting scholar, however, Olapade has found a way to merge her fluency in U.S. banking data with her longstanding curiosity about how the movement of money shapes society. Rather than international trade, her focus is on financial inclusion.

The Federal Reserve provides the backbone for millions of daily payments—a trove of potential insights, if treated with the right sensitivity. By combining branch-level financial flows with other financial and demographic data, Olapade is discovering what bank-to-bank movements of money reveal about geographic differences in savings, investment, and use of modern financial tools. “What do the payment patterns tell us about the incomes in these neighborhoods?” she said.

The research could also help the Fed’s bank examiners to detect suspicious activity and fraud. Without losing sight of the safety and soundness of banks, Olapade is leveraging the unique vantage of the Fed to learn about the safety and soundness of the communities those banks serve.

—Jeff Horwich

KATHERINE RICHARD

Assistant Professor of Poverty and Public Policy,
University of Wisconsin–Madison (Fall 2026)

IDENTIFYING GAPS, ALLEVIATING
HARDSHIPS

Growing up in a neighborhood where people of different means mingled, Katherine Richard could see what life was like for families that weren’t middle class like hers.

There were classmates who didn’t have much to eat at home, classmates in public housing, classmates struggling with tuition. “I have a lot of memories of these sorts of things,” she said.

That awareness of economic inequality followed her into her professional life. As an economist, Richard researches the effects of aid programs aimed at lower-income people, such as welfare benefits and COVID-19 payments.

A recent study she produced with a co-author focused on penalties Michigan imposes on welfare recipients who don’t fulfill work requirements. The study found that, after the state cut off benefits, recipients were less likely to fulfill requirements to regain those benefits.

That may be because housing, transportation, and child care are prerequisites for steady employment, and it’s harder to pay for those things when people lose benefits, Richard said. Many survive by cobbling together support from friends and family, charity, and various odd jobs.

“If your goal is to get more people employed, then making penalties more severe [than they are currently] is not going to help people do that,” Richard said.

In another study, she and co-authors examined a cash assistance program run by a private charity for low-income families during the COVID-19 pandemic. They found the amount needed to reduce hardship was likely much more than the \$1,000 one-time payment provided by the program.

Families surveyed were overjoyed to be able to repair cars and pay for other necessities, but most struggled as much as those who received no cash, Richard said. “You’re answering a survey about how you would rate your hardship conditions: ‘Well, things are bad. They’re still bad.’”

Richard became an economist because she enjoys math and analyzing policies. “I really like thinking about policy systems. What are the rules we as a society have set down about how we organize ourselves?”

That gives her a valuable tool to address how rules can perpetuate economic inequality.

It’s important to understand how these systems work, she said. “Then maybe we know what the levers are, and we can focus in on those levers and who has control over them.”

—Tu-Uyen Tran

“If your goal is to get more people employed, then making penalties more severe [than they are currently] is not going to help people do that.”

—Katherine Richard

2025–26 Institute
Visiting Scholars

The Institute annually invites selected scholars from many disciplines to pursue research while in residence at the Minneapolis Fed.

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Executive Vice President and Chief Economic Adviser, Federal Reserve Bank of Atlanta

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Barbara Biasi
Assistant Professor of Economics, Yale School of Management

Florin Bilbiie
Professor of Macroeconomics, University of Cambridge

Laura Castillo-Martinez
Assistant Professor of Economics, Duke University

Jacelly Cespedes
Assistant Professor of Finance, University of Minnesota Carlson School of Management

Lukas Freund
Assistant Professor of Economics, Boston College

Pamela Giustinelli
Senior Assistant Professor of Economics, Bocconi University

Kareem Haggag
Associate Professor of Behavioral Economics, UCLA Anderson School of Management

Christian Hellwig
Professor of Economics, Toulouse School of Economics

Agustin Hurtado
Assistant Professor of Finance, University of Maryland Smith School of Business

Annamaria Lusardi
Senior Fellow, Stanford Institute for Economic Policy Research

Cedomir Malgieri
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Professor of Business Economics and Public Policy, University of Pennsylvania Wharton School

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Assistant Professor of Economics, Yale University

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Katherine Richard
Assistant Professor of Poverty and Public Policy (Fall 2026), University of Wisconsin–Madison La Follette School of Public Affairs

Moises Yi
Senior Economist, U.S. Census Bureau

Samuel Young
Assistant Professor of Economics, Arizona State University

Still Looking

A RETURN TO RISING LONG-TERM UNEMPLOYMENT?

BY ANDREW GOODMAN-BACON AND ABIGAIL WOZNIAK

UNDERSTANDING THE CONDITION of the U.S. labor market requires more information than the unemployment rate alone. A labor market where unemployment spells last a few weeks is likely very different from one where job seekers take half a year or more to find work, but both may have identical unemployment rates. One key indicator is the long-term unemployment rate, which is commonly defined as the share of the labor force that has been out of a job and seeking work for 27 weeks—about six months—or more.

The long-term unemployment rate quantifies a particularly severe and possibly harmful type of unemployment. Knowing the extent of such unemployment adds insight into how workers are faring, and it may contain information about how dynamic the economy is—when change is not only possible, but perhaps frequent and hopefully efficient.

Long-term unemployed workers are also a potential resource for economic growth. In an aging economy, growth depends in part on finding new workers. Those who are



long-term unemployed are a ready source of such workers, since they are already actively seeking employment. An economy seeking growth cannot afford to overlook them.

Long-term unemployment in the U.S. experienced an unprecedented recovery following the COVID-19 pandemic, but there are indications that it has started to rise again. In this article, we examine the recent swings in long-term unemployment, its historical trends, and ideas about where it may be heading in the near future.

Where are we today?

THE COVID SURGE IN LONG-TERM UNEMPLOYMENT HAS FADED

In the first week of March 2020, 208,000 people filed for unemployment insurance (UI) benefits, a convenient weekly measure of overall unemployment. This was a historically low number, especially in light of the long, slow recovery from the Great Recession, when as many as 665,000 people became unemployed in a single week in 2009. By the end of March 2020, COVID took hold in the United States and 6 million people claimed unemployment.

Economists and policymakers voiced concerns that a shock of this size would create lasting and painful long-term unemployment. They had at least three clear reasons to worry.

One related to the size of the COVID-19 recession. The shock in 2020 generated an enormous increase in the number of unemployed workers, and unemployment is the first link in a sequence that can develop into long-term unemployment (see the Data Dive at the end of this issue). From April to May 2020, the unemployment rate shot from 4.4 percent to almost 15 percent, the fastest change ever recorded and the highest level since the Great Depression. Millions of newly unemployed workers, especially those with less formal education, low wages, or a history of unemployment spells, were suddenly at risk of becoming long-term unemployed (Machin and Manning 1999; Mueller and Spinnewijn 2024).

A second concern came from the fact that no one knew how long COVID’s economic effects would last. This likely slowed job finding, narrowing the path back to employment for the millions of newly unemployed workers. The number of vacant jobs per unemployed worker and the monthly probability that an unemployed worker found a job fell by about one-third in the first months of the pandemic (Mongey and Horwich 2024). As long as these hiring conditions held, the unusually large pool of unemployed workers would be more likely to move toward long-term unemployment.



Job seekers in Chicago attend a job fair hosted by Cook County in June 2025. New automation technologies as well as policy shifts may be changing the long-term unemployment landscape.

Finally, unemployment is, to some extent, self-perpetuating. Job searchers lose steam (Zuchuat et al. 2023), skills deteriorate (Cohen et al. 2025), and firms are less likely to hire applicants who have been unemployed for a longer duration (Eriksson and Rooth 2014). With so much of the economy shut down during COVID and with income supports expanding, millions of newly unemployed workers would miss out on their best opportunity to find a new job because they were unable or unwilling to search for one right away.

Consistent with these concerns, and with all previous U.S. recessions, long-term unemployment did rise rapidly after COVID. Figure 1 shows that the share of the labor force (everyone who either has a job or is looking for one) who had been out of work for six months or more rose to 2.6 percent in March

JAMIE KELTER DAVIS/BLOOMBERG VIA GETTY IMAGES

2021, representing 4.3 million people and more than triple its pre-pandemic level. Moreover, the experience of long-term unemployment was more widespread than traditional point-in-time measures suggest. In California, 14.5 percent of the labor force received UI for at least 27 weeks during the first year of COVID. Not all of them received it in a single spell, however, and so were not officially considered long-term unemployed (Bell et al. 2022).

The substantial rise in long-term unemployment in 2020 ultimately did not last. Even just one year after its peak in March 2021, the data show that initial fears about lasting changes to the structure of American unemployment did not materialize. Figure 1 shows that by mid-2022, the long-term unemployment rate had fallen back below 1 percent.

This recovery also holds for groups of workers who ordinarily have quite different labor market outcomes. No group of workers defined by age, education, race, or sex had appreciably different long-term unemployment rates in 2024 than they did in 2018, even though they had very different levels of long-term unemployment in both periods.

How did the U.S. avoid a prolonged period of elevated long-term unemployment? The most important factor was the speed of the COVID recovery. The unemployment rate fell almost as fast as it had risen and hit its 2019 low of 3.5 percent in July 2022. In fact, many macroeconomic relationships returned to normal within two years of COVID’s arrival, and the labor market was tighter in 2022 than in 2019 (Mongey and Horwich 2024). These extraordinary changes drew many

GLOSSARY

Labor force participants: Individuals who are employed or actively seeking work.

Unemployment rate: Share of labor force participants who do not have a job.

Long-term unemployment rate: Share of labor force participants who have been unemployed for 27 weeks or longer.

Quit rate to nonemployment: The share of workers who quit their job and do not immediately have a new one.

workers out of unemployment before COVID and its consequences pushed them into long-term unemployment.

Yet as striking as the COVID recovery was, the pre-pandemic baseline to which the labor market returned is itself the product of substantial long-run changes. Instead of stability, this history of long-term unemployment in America shows large and highly consequential trends, and it is important to ask whether these will resume.

Where have we come from?

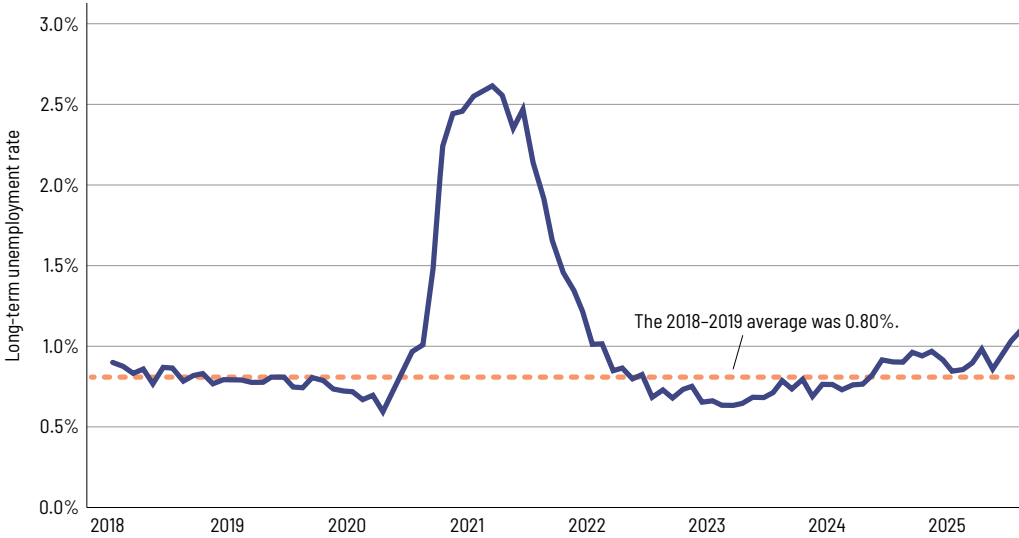
A TREND TOWARD MORE LONG-TERM UNEMPLOYMENT

The recession of the early 1980s was one of the worst economic crises since the Great Depression. Speaking to the Joint Economic Committee in December 1982, Martin Feldstein, then chair of the Council of Economic Advisers, stressed the “particularly severe” increase in the share of unemployed workers who were long-term unemployed, which had tripled to about 21 percent. “No one can contemplate such numbers,”

1 RAPID RISE, QUICK RECOVERY

The most important factor preventing a rise in the long-term unemployment rate was the speed of the COVID recovery.

Sample includes civilian Current Population Survey respondents participating in the labor force who are at least 16 years of age. Weighted using official CPS population weights. Seasonally adjusted. Source: Bureau of Labor Statistics, CPS August 2025, retrieved from FRED, Federal Reserve Bank of St. Louis, Sept. 5, 2025.



he said, “without reflecting on the financial hardships that so many people have suffered.”

If he were speaking today, just two years since the post-COVID labor market recovery brought the long-term unemployment share back to its lowest level since the Great Recession, Feldstein would be even more concerned: 25.7 percent of unemployed workers in August 2025 were long-term unemployed.

The context for Feldstein’s original alarm and for today’s long-term unemployed workers accounting for 1 in 4 of all unemployed workers is shown in Figure 2. The path of long-term unemployment after selected recessions going back to 1960 highlights the trend toward higher long-term unemployment rates (Juhn et al. 2002). During expansionary periods in the 1950s and 1960s, less than one-quarter of 1 percent of the labor force had been unemployed for more than 26 weeks, and the share rarely exceeded 1 percent even during recessions.

The recessions during the 1970s, 1980s, and 1990s were worse. Figure 2 shows that not long after Feldstein’s testimony, 2.6 percent of the labor force was long-term unemployed, more than twice as high as in midcentury recessions. Cycles were also longer. The time between troughs in the long-term unemployment rate in the 1950s was about two years, but it rose to between five and 10 years after the ’70s. Recoveries, as measured by long-term unemployment, were also weaker. Figure 2 shows that long-term unemployment at the end of the recovery from the 1960 recession was 0.25 percent but



it was more than twice as high—0.6 percent—at the end of the recovery from the 1981 recession.

The most severe long-term unemployment episode recorded in modern labor market data, also plotted in Figure 2, was the Great Recession. While the peak of the unemployment rate at 10 percent in October 2009 was not as high as in 1982, the peak of the *long-term* unemployment rate—4.5 percent in April 2010—was substantially higher. Moreover, the figure shows that long-term unemployment recovered very slowly, only return-

BRIAN ALPERT/GETTY IMAGES



In an aging economy, growth depends in part on finding new workers. Long-term unemployed workers are a potential resource for economic growth.



Long-term unemployment can create desperation. From far left: Auto workers queue for unemployment benefits in 1980; a crowd of unemployed workers attends a job fair in 2009; and a woman fills out an application in 2021.

PHOTOS VIA GETTY IMAGES: ROBYN BECK/AFP, PAUL HENNESSY/SOPA IMAGES/LIGHTROCKET

ing to its pre-recession level after 10 years. Continuing the trend that began in the 1970s, this baseline level of long-term unemployment was itself relatively high, about 0.9 percent.

Economists have struggled to understand why the time that Americans spend in unemployment has grown over the last seven decades (Coibion et al. 2013).

Changes in the U.S. population and labor force, as profound as they are, appear not to be the explanation. For instance, the share of workers who do routine manual jobs (think midcentury manufacturing) has fallen from 60 to 40 percent since 1975 (Albanesi et al. 2013). Workers who lose routine jobs remain unemployed for about the same length of time as other workers, though, so this sectoral change probably cannot explain long-term unemployment trends. The flattening of women’s labor force participation in the 1990s made long-term unemployment more cyclical but did not change its trend (Albanesi 2025). Similarly, during the 2001 and 2008 recessions, “compositional changes in the unemployed account for virtually none of the observed rise in long-term unemployment,” according to a paper in the *Journal of Labor Economics* (Kroft et al. 2016).

Another idea is that changing labor market institutions are behind long-term unemployment trends. After all, programs like unemployment insurance, cash welfare, or disability insurance often do reduce employment (see Filges et al. 2018). The problem is that they have mostly become less generous since the 1990s (O’Leary et al. 2023), which would tend to reduce unemployment durations. One exception is disability insurance, which has grown significantly: Social Security data show that about 4.5 million more people receive it today than in 1980. But disability insurance is primarily linked to labor force exit (see Autor et al. 2016), so it is not likely to be the reason why more people are long-term unemployed.

The best explanations, although far from complete, relate to how people search for jobs. Consider how the internet has made it easier to submit job applications. Between 1980 and the 2010s, the number of jobs to which a typical prime-age unemployed worker applied each month rose from 2.7 to 7 (Birinci et al. 2025). In an otherwise standard model of job search, this behavior can actually make unemployment durations go up. Firms have to sift through many more applications than they used to, which takes time that adds to the duration of workers’ unemployment. Submitting more applications also means that workers have a higher chance that a good job is about to come through, which may influence their decision to reject less-desirable offers and remain unemployed longer (Birinci et al. 2025).

Wage inequality can matter, too. If all jobs were identical and paid the same wage, then searching for a job would entail nothing more than waiting for an offer. With substantial wage inequality, however, workers may rationally pass up a lower-paying opportunity in the hope of getting a better-paying offer in the future. This would tend to mean that as wages became more unequal, especially at the top, unemployment spells would get longer. In fact, trends in wage inequality among comparable workers are positively correlated with unemployment durations between the 1970s and 2000s (Mukoyama and Şahin 2009).

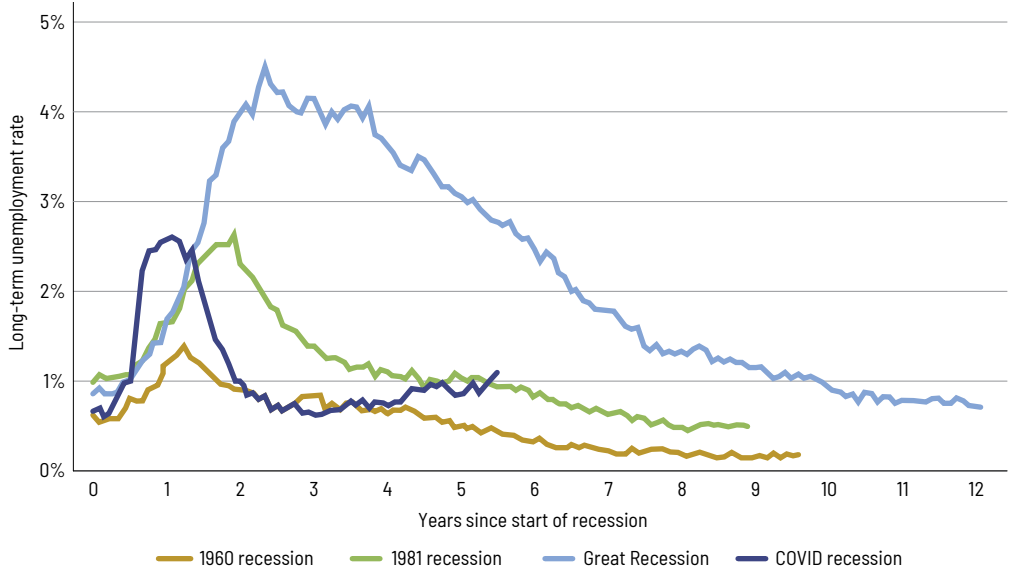
Against this backdrop, the COVID recession appears as both an anomaly and a continuation of a trend. Long-term unemployment both rose and fell faster than in any other recession, but by 2022 it was back in line with recent history.

But the factors that are thought to influence long-term unemployment may be set to change. Artificial intelligence is already a part of job searches, for example, and major shifts to the safety net could affect support for unemployed workers and thus how long and hard they search.

2 / DIFFERENT THIS TIME?

Unlike the slow and steady decline after prior recessions, long-term unemployment after COVID fell steeply but is now rising again.

Each line at right represents the monthly long-term unemployment rate between the beginning of one recession and the beginning of the next. Sample includes civilian Current Population Survey respondents participating in the labor force who are at least 16 years of age. Weighted using official CPS population weights. Seasonally adjusted. Source: Bureau of Labor Statistics, CPS August 2025, retrieved from FRED, Federal Reserve Bank of St. Louis, Sept. 5, 2025.



Where are we going?

THE FUTURE OF LONG-TERM UNEMPLOYMENT IN THE U.S.

If the long-term unemployment rate’s rapid return to normal was a surprise, its recent uptick is a reminder: Recovery is not the same as stability.

Figure 2 shows that long-term unemployment tends to rise sharply during recessions and fall during recoveries. But over the past year, it hasn’t fallen; it has risen slightly. While the unemployment rate has held steady at around 4 percent since mid-2024, the long-term unemployment rate has ticked upward. This kind of rise is unusual during an expansion and is not part of the labor market’s typical recovery path. If it continues to climb, it could be an early sign of trouble.

One way to understand where long-term unemployment might be headed is to look at the structure of labor market flows. High churn—lots of firing, quitting, and hiring—would mean that unemployment spells rarely last very long, so increases in unemployment would not raise long-term unemployment by much. Low churn implies the opposite and is sometimes called low dynamism: Fewer unemployment spells begin, but the ones that do tend to last a long time. Therefore, if we know how these flows might evolve, we can predict how long-term unemployment might evolve too.

Pre-pandemic data on labor market flows suggest that a 1 percentage point change in unemployment would lead to about a 0.4 percentage point change in long-term unemployment one year later (Chodorow-Reich and Coglianese 2021).

An array of policy shifts—new tariffs, changes to the tax code, cuts to safety net programs, tightening immigration enforcement, and federal downsizing—could shape long-term unemployment in ways that are not apparent in current data trends.

Applying this relationship to current forecasts, which predict an increase in unemployment from about 4.1 percent in early 2025 to 4.7 percent in 2026, suggests a rise in long-term unemployment of 0.24 percentage points. This is far from the typical peak during recent recessions but nevertheless means an increase of about 400,000 workers.

Specific labor flows may contain additional clues about future labor market trends. For example, in a tight labor market new jobs are relatively easy to find, so workers may feel comfortable quitting their job without having a new one lined up. Therefore, these “quits to nonemployment” tend to rise when the labor market is strong. In contrast, workers are worried about quitting in a weak labor market for fear that they will remain unemployed for a long time. In this scenario, quits to nonemployment fall. In fact, the rate of quits to nonemployment provides a better forecast of unemployment six months to a year later than measures like contemporaneous layoffs,

even though layoffs predict short-term unemployment very well (Ellieroth and Michaud 2025).

All of these cyclical properties of quits to nonemployment make their sharp downturn in 2023 a worrying sign. Figure 3 plots the rate of quits to nonemployment among prime-age workers over the last three recessions. While these quits recovered especially quickly after COVID, the increase did not last. Quits to nonemployment have been falling for about two years, a pattern which was not observed in the recovery from the Great Recession or the 1981 recession. If workers have an accurate read of where hiring is headed, this may foreshadow rising long-term unemployment.

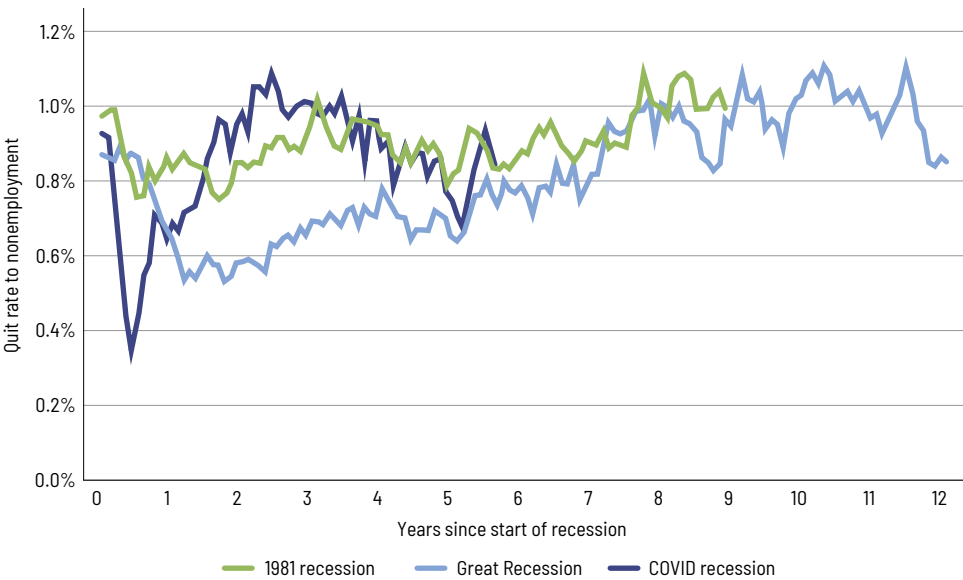
Another sign of change comes from recent labor market entrants. The average monthly unemployment rate for new college graduates in the first half of 2025 was 5.3 percent, up from 4.1 percent in the first half of 2022 and higher than the 4 percent rate for all workers. This mismatch could lead to longer unemployment spells for younger workers—both because they are having a harder time finding jobs now and because initial conditions matter. Workers who graduate into weak job markets experience earnings losses and higher unemployment for years (see Schwandt and von Wachter 2019). A generation that misses the first rung of their career ladder may carry those scars for decades.

But of course, long-term unemployment may not simply follow a predictable trend. For example, firms are increasingly using AI tools to perform the kinds of reasoning and communication tasks traditionally done by highly paid workers. What this means for long-term unemployment depends crucially on whether AI replaces these workers and creates new and possible long unemployment spells or allows them to do other productive tasks, preserving jobs and even raising wages (see Freund and Mann 2025). How these forces will affect aggregate trends is not yet known.

An array of specific policy shifts, too—such as new tariffs, changes to the tax code, cuts to safety net programs, tightening immigration enforcement, and federal downsizing—could shape long-term unemployment in ways that are not apparent in current data trends. Federal workers who lose jobs, for example, may struggle to find similar roles in the private sector (Sullivan 2025). New manufacturing positions may or may not emerge. Work incentives in safety-net programs may raise employment but could have unintended negative effects if they overlook barriers to employment (see Gray et al. 2023; Gangopadhyaya and Karpman 2025).

Long-term unemployment is a particularly worrisome outcome, so its trends, fluctuations, and future are important to understand for policymakers and researchers alike. Recent increases may be small. But if history is a guide, these changes are worth watching closely. ★

With research assistance by Zoe Stein.



3 HEADING FOR THE EXIT

It’s a sign of economic optimism when workers quit without another job lined up. By this measure, optimism has been falling.

Each line at right represents a three-month backward moving average of the rate of quits to nonemployment in the months between the beginning of one recession and the beginning of the next. Sample includes civilian Current Population Survey respondents employed in the previous month who are between 22 and 55 years old and are linked across consecutive months. Unweighted and seasonally adjusted. Source: Ellieroth and Michaud, Monthly Transition Rate of Prime-Age U.S. Workers From Employment to Non-Employment Due to a Quit, retrieved from FRED, Federal Reserve Bank of St. Louis, Sept. 5, 2025.

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Automation, inflation,
and firm power are
changing labor markets.
Erik Hurst wants to know
how we will adjust in

THE LONG RUN

BY LISA CAMNER MCKAY

PHOTO BY ANJALI PINTO

With the right data, economists have the tools to quantify the effects of economic changes in the short run. Say a state increased its minimum wage by \$1. Give Erik Hurst data on wages, hours, and employment, and he can analyze what happened to wages and employment in the following year or two.

But more and more, Hurst, a professor at the University of Chicago Booth School of Business and a member of the Institute's advisory board, is less interested in the short run than the long run.

"I have a series of papers in my mind that are started but not even close to being finished to try to address the question, How long is the long run? How long does it take for a full adjustment to some of these labor market changes?" Hurst said. "Is it centuries? Is it decades? Is it years?"

In the long run, firms will switch from workers to a less expensive input if wages rise too high. In the long run, labor will adjust to the decline of one industry and the rise of another. In the long run, workers will learn the skills to take advantage of the latest technologies. But the timing matters.

"If the adjustment process is sufficiently slow, it might cause us to prefer one policy to another type of policy for various reasons," Hurst said. "I think that's a question we don't really think enough about. That's where my heart is."

ECONOMIC GROWTH, WAGE STAGNATION

In an article from 2023, you observed that for most of the 20th century, economic growth was associated with rising median wages, even after adjusting for inflation. However, since the early 1980s, the economy has been growing while real wages have not. What are the main reasons for this change?

Let me start with two other facts that I think are broadly related. First, we know that inequality has increased during the same time period, where wages at the top of the distribution have been growing sharply, even though median wages have been relatively stagnant. Second, we've also seen employment rates at the bottom part of the distribution declining more than at the median or at the top.

I've been thinking quite a bit about the joint set of these three facts. We have different names we call it—you can call it automation or skill-biased technological change or robots.

They're all relatively similar in their economic mechanism, where something has changed, in my view, on the production side as opposed to the demand side. The technological advances have been substitutes with some types of workers and maybe complements with others. We can see evidence of how this has displaced workers in the manufacturing sector because that's easy to measure—manufacturing employment is spatially concentrated, and as a result, the job losses have put some downward pressure on wages and employment rates at the same time, just like a traditional labor demand shock would imply.

How we think about that automation and its effect on labor markets and its interactions with broader trends for certain types of workers, particularly the non-top part of the distribution, is an important research agenda for us to consider.

Do you think it's likely that we'll continue to see economic growth without wage growth? Or do you see recent economic developments as possibly changing that trajectory?

Every time we start to forecast out into the future, different patterns emerge. In the mid-2010s, we started to see the wages at the bottom part of the distribution actually narrow some relative to the median. And that has continued through the post-pandemic period as well. I have some work on how inflation could do some of that because workers at the bottom can switch employers more easily than workers at the top, and changing jobs tends to lead to wage growth. But this pattern predated the pandemic.

Now, this comes after a long period of time when there was no wage growth at the bottom. So how much of that is catching up? How much of it is selection of different people at different parts of the distribution moving into employment? I am not sure about any of this. So do I believe automation is still going to be there? Do I believe these forces could still have effects? Yes. That makes me pessimistic. But I am seeing signs that something is going on that's moving things at the bottom part of the distribution as well.

Do you have a hypothesis for what has been driving real wages up at the bottom of the distribution in recent years?

When labor demand increases and needs some reallocation of people across sectors, you tend to get more of that at the bottom part of the distribution in the short run than the top part of the distribution, because workers at the bottom are more elastic.

For example, during the pandemic, when demand for waiters goes down but demand for delivery drivers goes up, that's a pretty easy movement to potentially make. When finance goes down but robot making goes up, that's an adjustment that will occur at the top end, but that takes time because it involves human capital development and a whole bunch of other things. And so the speed at which adjustment occurs to different types of shocks differs across the income distribution, both in the short run and the long run, depending upon the adjustments that are needed.

Why do economists care that wages are stagnating for a large chunk of the middle class while economic growth is still occurring?

For me, it is for the distributional consequences. In general, if productivity goes up, that's better for somebody. We're strictly better off with productivity going up. Now, how much of that is going to the workers at different parts of the distribution? How much of that is going to owners of the firms versus labor broadly? The money's going to go somewhere. Productivity growth is good for economies.

So this is a distributional comment—how the gains from productivity growth get distributed. We do tend to know that when the middle class stagnates, it has spillovers throughout the whole distribution, through a variety of different socioeconomic or geopolitical forces. So I think, even if I'm just interested in long-run growth and I don't care about the distribution, what happens to the distribution can be important for its effects on long-term growth through political populism, through incentives for human capital development, through socioeconomic events like drug use and suicide and crime. All of those tend to be related to these types of stagnation over a long enough period of time.

How do the incentives to invest in education and skill acquisition—human capital development—change due to wage stagnation?

The basic idea is that if I invest in getting certain types of skills, I might get some return in higher wages. There's some cost to getting the skills and there's some benefit. And if the cost is large in order for me to get the skills I need, then I might not do it at all.

I like to teach the labor market as a ladder metaphor. Quite often, if the rungs get very far apart, I might not be able to grab that upper rung to climb that ladder. And so having the rungs a little closer allows people to accumulate up by getting skills, moving to different occupations, taking some actions that could move you up the broad human capital distribution.

INFLATION AND MARKET POWER

In a recent paper, you write that firms are better off from the recent burst of inflation because their market power increased. How does inflation increase firms' market power in the labor market?

What it means is that our wages are relatively rigid. I don't know about you, but I did not get a 9 percent increase in my earnings during the period when there was a 9 percent increase in inflation during 2022 and 2023. Maybe I got a 3 percent raise. But I don't think I got 6 percent less productive during this period. What that means is resources have shifted from the workers towards the firms. My productivity didn't fall, but my real wages fell.

Our wages are stuck. If you look at the distribution of wage changes in the U.S., which I've done using wage data from ADP, the payroll processing company, you see huge spikes at zero and huge spikes at 3 percent, a missing mass at 1 percent, and then a long tail beyond 3 percent. So it seems like zero and 2–3 percent are the raises most people get most of the time.

Why is that a norm? I don't know. But given that norm, a burst of inflation traps people at their firm with wage increases that are between zero and 3 percent nominal, meaning real wages are falling. That's exactly what we saw during the post-pandemic period, 2021 to 2024. Real wages collapsed in the distribution. So during this period of time, market power shifts towards the firm because nominal wages are sticky.

We see this in the data: We see that firm profits were at historically high levels in 2022, despite oil prices going up and despite supply chain backlogs. Profits were at all-time high rates in terms of the profit-to-GDP ratio, in part because they got one input, labor, at a substantial discount during this time period. And you can see in other periods of inflation, 1974 and 1979, profit rates also spiked in a relative sense.

“If technology changes, **HOW DO PEOPLE ADJUST? HOW LONG IS THE LONG RUN?**

If they adjust slowly, **HOW DOES THAT INTERACT WITH GOVERNMENT PROGRAMS?”**

Does the shift of market power from workers to firms depend on the underlying cause of inflation?

The shift is the direct effect of inflation. And then there's the question, Where does the inflation come from? Which is a deeper question.

Thinking about the post-pandemic period, we had two shocks that moved in opposite directions in terms of labor demand. There was the pent-up spending that came from the pandemic coupled with a large influx of government spending. This caused us to spend more as consumers, and firms to want to produce more to meet our demand, so labor demand went up. On the negative side, there were supply chain backlogs and an increase in energy prices from the war in Ukraine, and that reduced labor demand. The net effect might be labor demand was relatively unchanged. How do we know? Because we saw inflation go up but GDP and employment did not move much relative to the pre-pandemic levels. This tells me that the two shocks probably had offsetting effects on demand for labor.

Now if we think about something like new tariffs raising inflation, that is going to be purely a negative supply shock. In that world, you're going to have inflation, but you're also going to have real declines in labor demand as well. And nobody's going to be made better off by a negative labor demand shock.

A big rise in tariffs is like a negative productivity shock. Just as positive productivity shocks are going to be good for somebody, negative ones are going to be bad for somebody as well as the economy as a whole. The pie gets smaller in this case.

ROBOT SHOCKS AND LABOR FORCE PARTICIPATION

One long-term trend that you've looked at is the decline in labor force participation among men. What are the causes of this decline, and what are the consequences?

I believe that automation and skill-biased technological change has been a big driver of the declining participation rates for men over this period. You can see it when you look at regional variation: Employment declines were biggest in the places where manufacturing was most concentrated. Not that manufacturing is the only sector where automation took place, it is just the easiest to measure because it is so spatially concentrated. So we can compare Region A to Region B using Region B as a control group to allow us to identify the causal effect of automation on employment.

So I believe that technology has been a large part of this decline. And then we want to know, If technology changes, how do people adjust? How long is the long run? If they adjust slowly, how does that interact with government programs we might want to use to mitigate some of the transition dynamics?

It strikes me that this situation of automation affecting certain sectors that employ certain types of workers is potentially very specific to this moment of time, and it's unlikely to have occurred in the same way in the past or occur again in the same way in the future.

When I'm talking about this, I try to break it into three or four parts that help me think about technology's effect broadly on the labor market.

So question one, Is the technology a complement or a substitute with workers in production? If it's a complement, that's great. If it's a substitute, then the second thing we might want to know is, What is happening to the outside options to which these workers might move? Is the demand in other sectors for which these workers have similar skills growing at the same time this one sector is shrinking, or not? That makes a difference.

We've gone through robot shocks before. We called the “robot” a tractor, but the agricultural sector got automated away in terms of its employment rates. But it just so happened at a time when the manufacturing sector was growing, and the skill step size in that ladder metaphor between an agricultural worker's skill on their rung of the ladder and a manufacturing worker on a similar rung of the ladder was

“I like to teach the labor market as a ladder metaphor. Quite often, **IF THE RUNGS GET VERY FAR APART, I MIGHT NOT BE ABLE TO GRAB THAT UPPER RUNG TO CLIMB THAT LADDER.**”

small. My dad’s dad was an agricultural worker, my dad was a manufacturer. Sometimes you had to change locations because the agricultural jobs weren’t in the same place as the manufacturing jobs. So there was some adjustment. But the skill step size was relatively small.

Now, manufacturing is shrinking and professional services are growing, and that step size is a little bigger. So it’s not just whether the technology shock was a complement or a substitute with the worker. Both agriculture and manufacturing had shocks that displaced workers. The aggregate effects in the economy though depend upon what’s happening to other sectors at the same time.

The third question is, Does the technology shock play out quickly or slowly? If it happens slowly, we’re more able to adjust through natural attrition dynamics. People retire. Young workers move to new sectors. In the manufacturing scenario in the early 2000s, it was a quick shock. There was a lot of displacement as opposed to a slow atrophy, which is what we had before in agriculture. And so that made it a little bit more salient.

And then the fourth question, Are there policies to help with that transition? That depends on what the friction to adjustment is. Is it really a skill friction? And if so, how do we invest in skills? We know that’s hard. Are we doing job training programs? Are we thinking about vocational schools in community colleges? Are we thinking about whether everybody in high school needs to understand trig for the modern labor market? Maybe we could start adjusting the curriculum in high school or in community colleges or start apprenticeships in industry. Manufacturers today say, Ah, I can’t find workers. What they mean is, I don’t find the *skilled* workers I need to run the precision welding and the new fancy crane and things like that.

Apprenticeships are hard to sustain in equilibrium unless everybody does it. If your firm starts training some workers with apprenticeships, my firm is going to steal them as soon as you do. That’s why I’ve been thinking about tax credits for apprenticeships, to try to create an equilibrium where the training occurs at firms.

What are the questions and the economic patterns and behaviors that are capturing your attention now?

I really want to start thinking about adjustment process to structural changes like AI and automation more broadly. How does that adjustment process take place and how does that interact with policy?

I have another research area that uses models of worker sorting with frictions like discrimination to understand the effect on labor market outcomes and economic growth. My work with Chang-Tai Hsieh, Chad Jones, and Pete Klenow showed that reductions in labor market barriers, to women particularly but also to other groups, were important in yielding economic growth over time because it allowed people to move towards their comparative advantage in the labor market much more.

Pete, Chang, and I are doing some more work now about how the distribution of firm size growth is shaped and how changes in that distribution affect worker well-being in the labor market. I want to understand how the process of firm growth and worker wages interact. We know that firm entry has been declining over time. People refer to this as part of the declining dynamism of the economy. Can the decline in firm dynamism affect workers’ wages? We have fewer new firms and fewer small firms that grow fast. But, we will have more large, established firms. That brings us back to the same questions as before: Is declining firm entry going to lead to more wage inequality or will it mitigate inequality over time? I keep coming back to these inequality questions. I don’t know the answers to them yet, but I think it’ll be interesting. ★

This interview has been edited for length and clarity.

RESEARCH DIGESTS

World-class research can be lengthy and complex. Here, we present key findings from several studies by Opportunity & Inclusive Growth Institute scholars. These examples represent a fraction of the Institute’s growing body of research. For our full library, visit minneapolisfed.org/institute/publications/working-papers.



How women’s labor has shaped the U.S. economy

When women’s labor force participation was growing, recessions were milder

BY LISA CAMNER MCKAY

The late 1970s and early 1980s was a challenging time for the American economy, with inflation hitting 13.5 percent while unemployment reached 11 percent. It was also a turbulent time, as many indicators of the economy’s overall performance, including annual change in GDP and total hours worked, were moving up and down with pretty big swings.

Starting around 1983, however, something rather remarkable happened: The economy’s fluctuations became milder. Notably, GDP growth didn’t vary as much year to year, and inflation was more stable. Economists call this “the Great Moderation,” a period lasting from roughly 1983 to 2007, when the economy’s cycles of booms and busts were more mild than they had been.

ILLUSTRATIONS BY
MIKEL JASO

STUDY AUTHOR

STEFANIA ALBANESI, University of Miami

But starting around 1991, a troubling pattern emerged: Employment didn't recover as quickly as other economic indicators after a recession. While GDP growth and firm investment bounced back, employment remained low for longer.

These are economic puzzles with meaningful impacts on people's lives. Are the factors that led to the Great Moderation something that could be replicated? Is there a way to avoid future jobless recoveries?

Economists have offered a number of explanations for these changes to the business cycle, focusing mainly on the role of technological change and monetary policy. But former visiting scholar Stefania Albanesi was struck by the *timing* of the changes. The Great Moderation coincided with a period of rising labor force participation by women. Jobless recoveries coincided with the plateauing of women's labor force participation.

In her new Institute working paper, Albanesi sets out to study how the changes in women's behavior in the labor market interacted with the aggregate economy. She shows that the 30-year rise

in women's employment and how women's labor responds over the business cycle are both important for explaining the economy's behavior during booms and busts. This analysis can help economists better understand the factors that influence the magnitude of expansions and contractions and better predict where the economy is headed next.

How men's and women's labor respond in recessions

Conventional analysis has generally assumed that workers respond similarly over the business cycle: Hours go up in good times when companies expand production, and they go down in bad times when firms scale back.

In fact, the data show that how much men work and how much women work do not follow the same patterns over the business cycle, for at least two reasons.

First, research shows that households value the "insurance" that its members provide each other. When the primary earner's employment prospects become more uncertain, the secondary earner becomes more likely to increase their hours and less likely to leave employment. So when the economy is entering a recession and unemployment is on the rise, secondary earners want to stay in the labor force. During the 1980s and '90s, men were much more likely to be

The data show that how much men work and how much women work do not follow the same patterns over the business cycle.

the primary earners and women the secondary earners, so while men's hours fell in a recession, women's hours increased.

Second, men's employment fell more than women's in recessions because men and women tended to be employed in different industries. In 1995, roughly the midpoint of the Great Moderation, men were 87 percent of the construction workforce and 68 percent of manufacturing; women were 77 percent of private education and health services and 61 percent of financial services. Construction and manufacturing see much bigger dips in employment during recessions than the service sectors see.

A long history of jobless recoveries—for men

Economic expansions and contractions all look a little different from each other, but generally there is a group of economic measures that move together in a way that is either good or bad for people and firms. The "jobless recoveries"

that began with the 1991 recession were notable because while GDP bounced back, employment didn't.

Since GDP captures the value of goods and services produced in the economy, most explanations for jobless recoveries have focused on factors that would lower firms' demand for labor, such as automation and outsourcing. During recessions, the story goes, firms started adopting technologies that replaced workers and moved other jobs overseas. Firms' output then bounced back, but they didn't hire as many domestic employees as before because they had found workarounds.

If automation were the reason for jobless recoveries, Albanesi points out, then we'd expect to see unemployment spells look different for workers formerly employed in manufacturing than for workers formerly employed in other sectors: Former manufacturing workers would find new jobs more slowly and their unemployment spells would last longer. The data do not bear this out, however.

This is where looking at men's and women's labor trajectories separately comes in. "It's not that the recoveries have become jobless since the 1991 recession. They always looked jobless for men, even in the 1970s and '80s," Albanesi said. In other words, business cycle dynamics for men have not changed.

But during the period when women

were entering the labor force in large numbers, they barely experienced any job loss during recessions. "Then their employment went up like crazy during the recovery, making it look like aggregate employment was recovering very, very strongly," Albanesi said. "But it was really just women driving the strong recovery."

Starting with the 1990–91 recession, however, the pattern of men's and women's hours began to look more similar, as the figure shows. In each panel, year zero is when unemployment is at its lowest—the height of the period of economic expansion. As economic conditions worsen, men's hours fall. This pattern holds in each of the six cycles pictured.

The pattern of women's hours looks different. In the first three cycles, the growth in women's hours slows but it never goes negative. In other words, total hours worked by women *continue to rise* through the recession.

In the 1990–91 cycle, women's hours grow but more slowly. In the 2001 and 2007–9 cycles, women's hours decline—not as much as men's, but the lines are now more or less parallel.

The rise of jobless recoveries for women

What happened in the early 1990s to make men's and women's labor patterns similar to each other? The main change:

TAKEAWAYS ↗↗

- Growing labor force participation of women contributed to milder business cycles from 1983 to 2007
- Employment for men has recovered slowly after recessions since at least 1970s
- After women's labor force participation plateaued in 1990s, their employment recovered slowly too

Women's labor force participation plateaued. Women were no longer entering the labor force in large numbers, which had caused their hours to increase even in recessions during earlier business cycles.

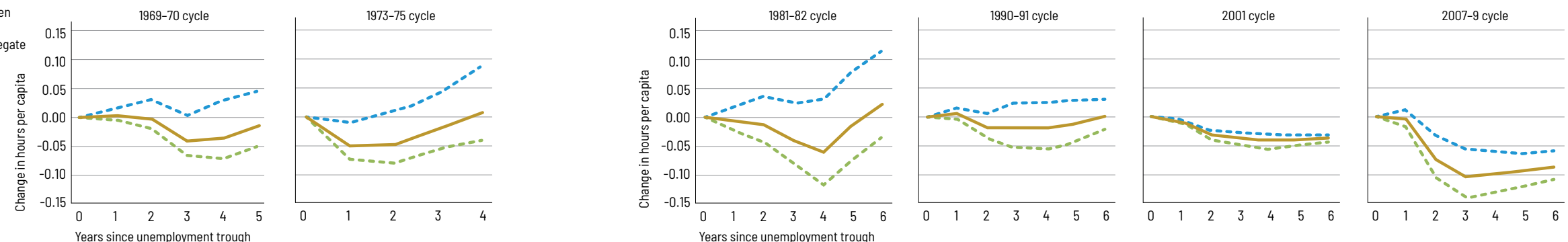
Other patterns might also have played a role in making men's and women's labor supply look more similar after 1990. One, marriage rates have declined, falling around 15–20 percentage points since the late 1960s. Even with cohabitation on the rise, the share of adults who are living together in committed relationships has fallen, which may mean fewer "secondary earners" become attached to the labor market in recessions.

Two, women themselves have changed. In 1970, only 11 percent of women in the labor force had a bachelor's degree or higher. Women also had less on-the-job experience than men on average, simply because fewer of them

CLOCKING IN

While average hours worked by men fell in each of these recessions, average hours worked by women increased in some recessions and fell less than men's in others.

This figure plots the change in hours per capita from the year with the lowest unemployment rate. The units are log of hours worked, which are close in value to the percent change. For example, in the 1969–70 cycle, two years after the unemployment trough, women's hours had increased approximately 3 percent while men's hours had fallen approximately 2 percent. Source: Albanesi, "Changing Business Cycles: The Role of Women's Employment," January 2025, using data from Current Population Survey.



had spent a career in the labor force. This situation changed as more and more women pursued higher education, joined the labor force, and stayed in the labor force. By 2021, the share of women in the labor force with a bachelor's or higher was 48 percent. Women's wages relative to men's wages rose commensurately, from around 65 percent in 1970 to 85 percent in 2017. The increase in experience and wages made male and female employees much more similar to each other in the eyes of employers.

What if women's labor force participation had continued to rise?

The role of women in the economy evolved immensely over the 20th century. Yet, the ways in which women's employment has differed from men's has not generally been considered in analyses of the macroeconomy.

Albanesi uses a counterfactual exercise to drive home the point: What if women's labor force participation had continued its 1969–92 growth rate after 1992? In Albanesi's calculation, aggregate hours would have declined only half as much in the 2001 and 2007–9 recessions. And, the growth in output during the subsequent recoveries would have been higher.

"This seems a little quaint right now because we have since had two massive recessions—we had the financial crisis and then the COVID crisis," Albanesi said. "But for institutions that monitor business cycles for policy reasons, I think this is something that is very useful to know." ★

With research assistance by Zoe Stein.



What happened to the college wage premium?

For decades, the wages of college-educated workers rose more than wages of workers with fewer years of formal education. That gap has stopped growing. **BY LISA CAMNER MCKAY**

For American workers, earning a college degree has been a path to higher wages for a very long time. This path became even more economically attractive starting in the early 1980s, when the gap in average wages between college degree holders and high school degree holders began a steep rise. In 1980, a worker with a college degree earned about 39 percent more than a worker with a high school degree. By 2000, that college wage premium had doubled, to 79 percent.

But in a new working paper from the San Francisco Fed, economists Leila Bengali and Robert Valletta, with former Research Associate Cindy Zhao, find that for the last 20 years, the gap in wages of college-educated and high school-educated workers hasn't really budged. It actually declined following the Great Recession, and in 2023 it was slightly lower than its 2000 value (see Figure 1).

"If the college wage premium is basically flat over a period when the cost of college is going up, that reduces the typical financial return to a college education." **ROBERT VALLETTA**

STUDY AUTHORS

LEILA BENGALI, Federal Reserve Bank of San Francisco; ROBERT VALLETTA, Federal Reserve Bank of San Francisco; CINDY ZHAO, Princeton University

Why does it matter that the college wage premium has stagnated if that premium is still high? While the college wage premium plateaued, the cost of a four-year degree has continued to rise, and in 2020–2021 it was 40 percent higher than in 2000–2001, according to data from the National Center for Education Statistics.¹ "If the college wage premium is basically flat over a period when the cost of college is going up, that reduces the typical financial return to a college education," Valletta said. "So this matters in the broad context of investment in college education, both for individuals and society as a whole."

A better understanding of the sources of the stagnation of college wage premium can help families, community leaders, and policymakers think carefully about college access, curriculum design, and new paths to economic security that may open to young people.

A supply story or a demand story?

Bengali, Valletta, and Zhao consider explanations for why the college wage premium has stagnated.

Is it that *supply* of college graduates has increased relative to the supply of high school graduates, and with more supply of workers competing for jobs, their wages aren't rising as much? Or has *demand* for college degree workers relative to demand for high school graduates ebbed as new workplace technologies become less reliant on the traditional skills possessed by college graduates?

There is evidence in support of both explanations. The supply of college grad-

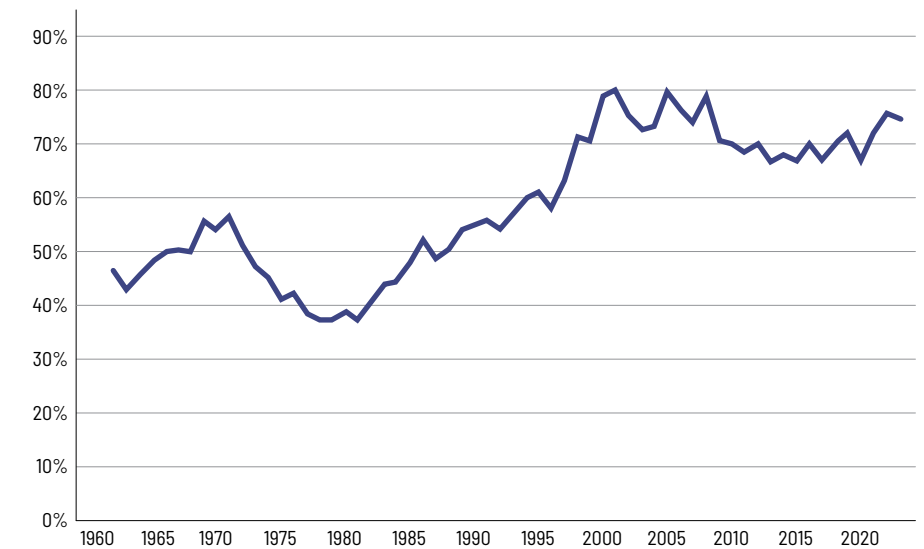
uates has indeed increased as a share of the workforce. Data from the Current Population Survey on civilian labor force levels for people aged 25 and over show that in 2000, workers with a bachelor's degree or higher were 31 percent of the civilian labor force. In January 2025, they were 45 percent.

It also appears that demand for workers with college degrees has declined since 2010. To explore the potential role of demand, the authors look at the minimum

educational requirement associated with online job postings. In 2010, there were 1.2 postings requiring a college degree for every 1 posting that did not require a college degree. By 2020, it was 0.6 postings requiring a college degree for every 1 that did not (Figure 2). According to *The Economist*, "America's professional-and-business services industry employs more people without a university education than it did 15 years ago, even though there are fewer such people around."

1: COLLEGE PREMIUM PLATEAU

The gap in average weekly earnings between college and high school graduates has been flat since 2001.



Sample includes full-time wage and salary workers ages 25–64 with exactly a four-year college or high school degree who earn at least \$50 per week (in 1989 dollars). Source: Bengali, Valletta, and Zhao, "Explaining Stagnation in the College Wage Premium," July 2025. Calculations based on CPS ASEC microdata.

TAKEAWAYS ↗

- The college wage premium rose substantially in the 1980s and 1990s, then stagnated
- This stagnation reflects a slowdown in demand for college-educated workers relative to demand for high school-educated workers
- Average wages of college-educated workers remain high relative to wages of high school-educated workers

So it seems that both demand and supply could be factors, but observational data alone can't reveal how important each is in explaining the stagnation of the college wage premium.

Substituting high school-educated workers for college-educated workers

To provide a quantitative assessment, the authors rely on a model that includes separate measures of supply and demand to explain the college wage premium. Their model identifies an important change that occurred starting around the year 2000: The degree of substitutability between college-educated and high school-educated workers increased. In the 1970s and '80s, firms were not very likely to switch away from college-educated workers even when their wages were rising quickly relative to high school workers' wages. The two groups of workers couldn't easily be substituted for one another.

By the 2000s, however, the substitutability between the two groups had increased. This means that for a given increase in college-educated workers' wages, firms became more likely to switch to high school-educated workers instead.

In previous research, economists usually assumed that the ability of firms to substitute college-educated and high school-educated workers was constant over time. Bengali, Valletta, and Zhao

show this is not the case. If they use their estimate of the substitution rate and other model parameters based on data through the late 1990s to model the college wage premium through 2023, the model will significantly overestimate the college wage premium. This result suggests that the substitution rate increased over time, reducing demand for college-educated workers.

On the supply side, an increasing supply of college graduates relative to high school graduates has tended to push wages for college-educated workers down. However, the size of this downward pressure didn't change much year to year over the time frame examined; the increase in supply existed in the 1980s when the college wage premium was rising, and it existed in the 2010s when the premium was stagnant. So increases in supply don't explain why the college wage premium plateaued.

The race between education and technology

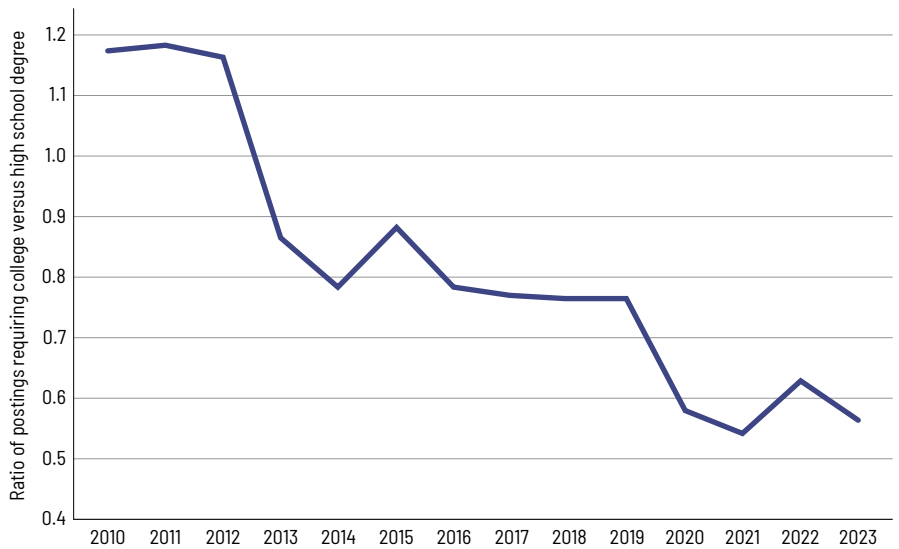
The wages for workers with different levels of education depend on the supply of each group as well as how well each group's abilities complement the technologies that firms use to produce goods and services. In the last two decades of the 20th century, the rapid advances in computer technology meant college-educated workers were in high demand. And while the supply of college grads was increasing, it was not increasing as quickly as demand. The result was a rising college wage premium.

In the 21st century, the nature of technological change has not advantaged college-educated workers to the same degree as before, so firms are able to employ high school-educated workers to a greater extent.

This is not just an effect of the recent

2: QUALIFIED FOR THE JOB

Demand for workers with college degrees has declined since 2010.



The ratio is calculated based on counts of job postings from many job websites. The authors use the minimum educational requirement for each job as identified by Lightcast. When no minimum is available, the authors use the Lightcast mapping of detailed occupations to the most common education and/or training requirements for the occupation. Source: Bengali, Valletta, and Zhao, "Explaining Stagnation in the College Wage Premium," July 2025. Calculations based on Lightcast job posting data.

proliferation of AI tools in many workplaces. "This pattern we're seeing, it's not something that emerged only in the last three or four years when AI came on the scene," Bengali said. "So I would not interpret this as being attributable specifically to AI."

One thing that has changed over this longer period is access and familiarity with computer technology. Once the province of college grads, today smartphones live in the pockets of 91 percent of Americans, according to the Pew Research Center. Meanwhile, the supply of college graduates has continued to rise. The result is a college wage premium that has moved little for 20 years.

For young people considering their future, what does all this mean?

"The college wage premium is still very high," Bengali said. "Yes, it's been flat since 2000, but I wouldn't want to overlook that it's still quite high." A recent estimate from economists at the Cleveland Fed suggests wages of college-educated workers are still likely to be 76 percent higher than wages of workers with less formal education in 2042.

And earning a college degree is still likely to lead to higher earnings over one's lifetime. Data from the Center on Education and the Workforce indicate that for workers with a high school or GED diploma, average lifetime earnings were around \$1.6 million. For workers with a bachelor's degree, it was \$2.8 million.

It's also the case that a career post-college depends on many factors that vary with each person. "The work that we present here is an average," Bengali said. "It doesn't reflect individual characteristics or choice of major." ★

1 Calculated based on the price of total tuition, fees, room, and board at four-year institutions as reported by the National Center for Education Statistics.



New moms “opt down” to lower-paying firms

Diverging paths for new mothers and fathers widen the gender earnings gap **BY JEFF HORWICH**

“a ny moms change career paths after having kids? ...” Among the discussion threads on choosing a daycare and “cringy HR stories,” the Working Moms forum at the pregnancy website What to Expect includes lots of soon-to-be-moms, like this one, pondering a job change. “... I’ve worked hard since I was young to get where I am now. I make great money, but I’m starting to feel like my career isn’t worth it anymore for the amount of time I’m taken away from my family and the stress.”

For any new parent, balancing a new baby with salary and career advancement can be a challenge. But it appears to send mothers and fathers down diverging career paths, on average, according to a new Institute working paper. Visiting scholar Brenden Timpe and co-authors Rebecca Jack and Daniel Tannenbaum, all of the University of Nebraska–Lincoln, assembled a unique combination of U.S. census data tracking millions of new parents and their

STUDY AUTHORS

REBECCA JACK, University of Nebraska-Lincoln; DANIEL TANNENBAUM, University of Nebraska-Lincoln; BRENDEN TIMPE, University of Nebraska-Lincoln

employment journeys over 15 years.¹ While prior research has documented the substantial “child penalty” paid by mothers, Timpe and co-authors break the trend into distinct components: the change in earnings relative to all other employees within a firm, and the effect of moving to a different workplace.

Their analysis reveals that American mothers and fathers follow very different paths after the birth of a first child (see figure).

“There’s a gender earnings gap before childbirth, but women and men move in parallel,” said Timpe. “And then childbirth is just so stark: Dads keep moving up the ladder to higher-paying jobs and higher-paying firms. Moms start bending ‘backward,’ going to lower-paying employers.”

Controlling for age, the economists find that one year prior to the birth of a first child, future mothers earn 14 percent less, on average, than future fathers. In the year of birth this gap widens to 38 percent as mothers—but not fathers—immediately experience reduced hours (and therefore earnings) within the firm.

Timpe and his colleagues are most focused on what happens in the decade after this initial earnings shock. Although mothers’ within-firm earnings begin to

“Childbirth is just so stark: Dads keep moving up the ladder to higher-paying jobs and higher-paying firms. Moms start bending ‘backward,’ going to lower-paying employers.”

BRENDEN TIMPE

recover, they simultaneously move to lower-paying employers. “There’s a lot of talk about moms opting out of the labor force,” Timpe said. “This is more of an ‘opting down.’”

The sample follows new parents for 11 years after birth. By this point, the gap in

average earnings between mothers and fathers has grown to 43 percent—primarily because of mothers moving over time to lower-paying firms. These calculations include only mothers and fathers who are working, so reported earnings are not skewed by stay-at-home parents.

Biggest drops for moms at top-paying firms

During this sample of births between 2001 and 2010, most new mothers did not report any break from work. (Parents in the analysis had at least four years of labor-force attachment prior to their child’s birth.) Seventeen percent of mothers had a pause in earnings for at least one quarter; 7 percent stopped working for at least a year. Even mothers with no break from the workforce experienced some opting down to lower-paying firms. However, the economists find that mothers who take more time away experience a larger drop.

They also find that the opting-down effect is especially strong for mothers who start at top-paying firms. “It’s really hard to maintain—to stay at those firms that pay the most—once you have a child,” Timpe said. The finding complements the idea of “greedy work,” defined by economist Claudia Goldin in an interview with Harvard Business Review as “a job that pays disproportionately more on a per-hour basis when someone works a greater number of hours or has less control over those hours.” Mothers might be less willing or able to put up with such jobs, choosing new roles and substantial cuts in pay instead—and cumulatively deepening gender disparities in earnings.

When the researchers examine new parents’ job changes by industry, they find related patterns. While more fathers than mothers change jobs after the birth of a child, fathers are less likely to change industry (and thus able to retain more of the human capital built up through their career to that point). Mothers are more

likely to leave finance, professional, and technical jobs, and more likely to enter lower-paying fields like health and education. They also move into more “substitutable” types of roles, requiring fewer specialized skills and with lower returns to experience.

A choice of life over work?

One interpretation of the findings is that many new mothers take advantage of the options available to them in the labor market; those who opt down are trading future salary and advancement in favor of other priorities and job amenities. The economists find that mothers who moved to lower-paying firms worked fewer hours, had shorter commutes, and were more likely to be fully remote. Interestingly, the returns to opting down in salary—in terms of work-life balance—appear to be greater for women, further tilting the incentives.

The pattern does not apply to all job amenities. Mothers who opt down in salary are less likely than fathers to have employer-sponsored health insurance for their household.

While the data reflect the conscious choices and trade-offs made by many new mothers, it’s not so simple. For one, the labor market does not offer a continuous menu of options. “Jobs are kind of ‘lumpy’ in some sense,” Timpe said. The substantial financial impact of many mothers’ choices suggests “there’s some sort of mismatch between the jobs that parents want and the jobs they can get. It’s either you’re all in, or you’re opting down.”

Even if mothers are freely choosing flexibility over money, the outcomes could be suboptimal from a social or economic standpoint. The new research illustrates how these collective choices undermine gender earnings parity. “There has been all of this progress in terms of women entering the labor market,” Timpe said. “But moms still bear

TAKEAWAYS ↗

- Unlike fathers, new mothers tend to move to lower-paying firms after child’s birth
- Even as mothers’ within-firm earnings recover, this “opting down” widens gender earnings gap over time
- Mothers gain flexibility and shorter commutes, but pattern impedes gender parity and under-utilizes human capital

the brunt of child care. That remains the norm and it goes to the next generation.”

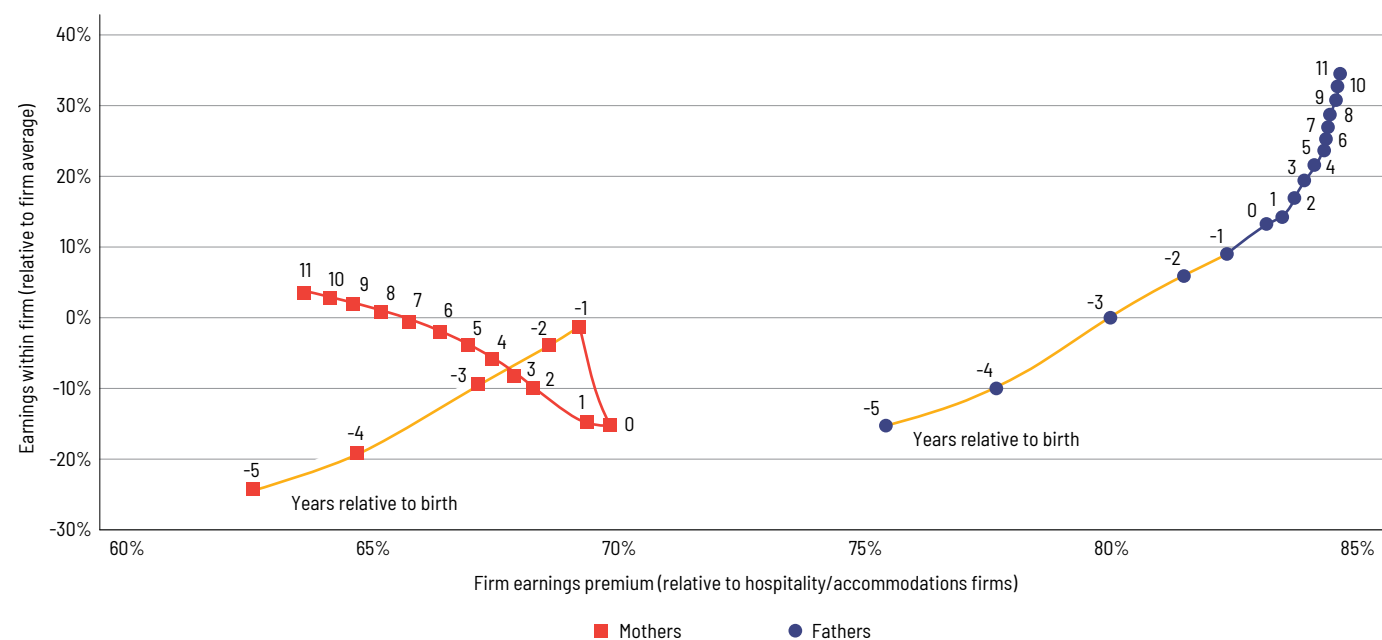
It is also likely inefficient for firms to disproportionately lose female workers when parenthood hits. “You have a worker who’s been working for you for years,” Timpe said. “They’ve built up knowledge, they know the systems, they’ve developed relationships with customers. If they can’t continue, you lose all that.” For the economy in general, many new mothers are downshifting into jobs where their specialized skills are not optimally used. Firms and workers lose that prior investment.

To keep a clear view of the trends, Timpe and his co-authors stopped their analysis in 2019, just before a pandemic forced a reckoning with work-life balance and pushed work-from-home into the mainstream. Future updates to the research could reveal whether new moms and dads, post-COVID, face an altered trade-off between career and parenthood. ★

¹ The research combines employment and earnings data from the Longitudinal Employer-Household Dynamics (LEHD) program, fertility data from the Census Household Composition Key, and workplace amenity data from the American Community Survey. During the period studied, the LEHD covered 25 U.S. states. The final sample includes more than 4.5 million first-time mothers and fathers with sufficient pre-birth earnings history.

MOMS REVERSE COURSE

Unlike new fathers, new mothers move to lower-paying firms after their first child.



The horizontal axis is a measure of the average pay premium of firms employing parents in each year before and after birth. This measure is normalized so that zero corresponds to firms in the hotel and restaurant industry. Source: Jack, Tannenbaum, and Timpe, “The Parenthood Gap: Firms and Earnings Inequality After Kids,” January 2025.

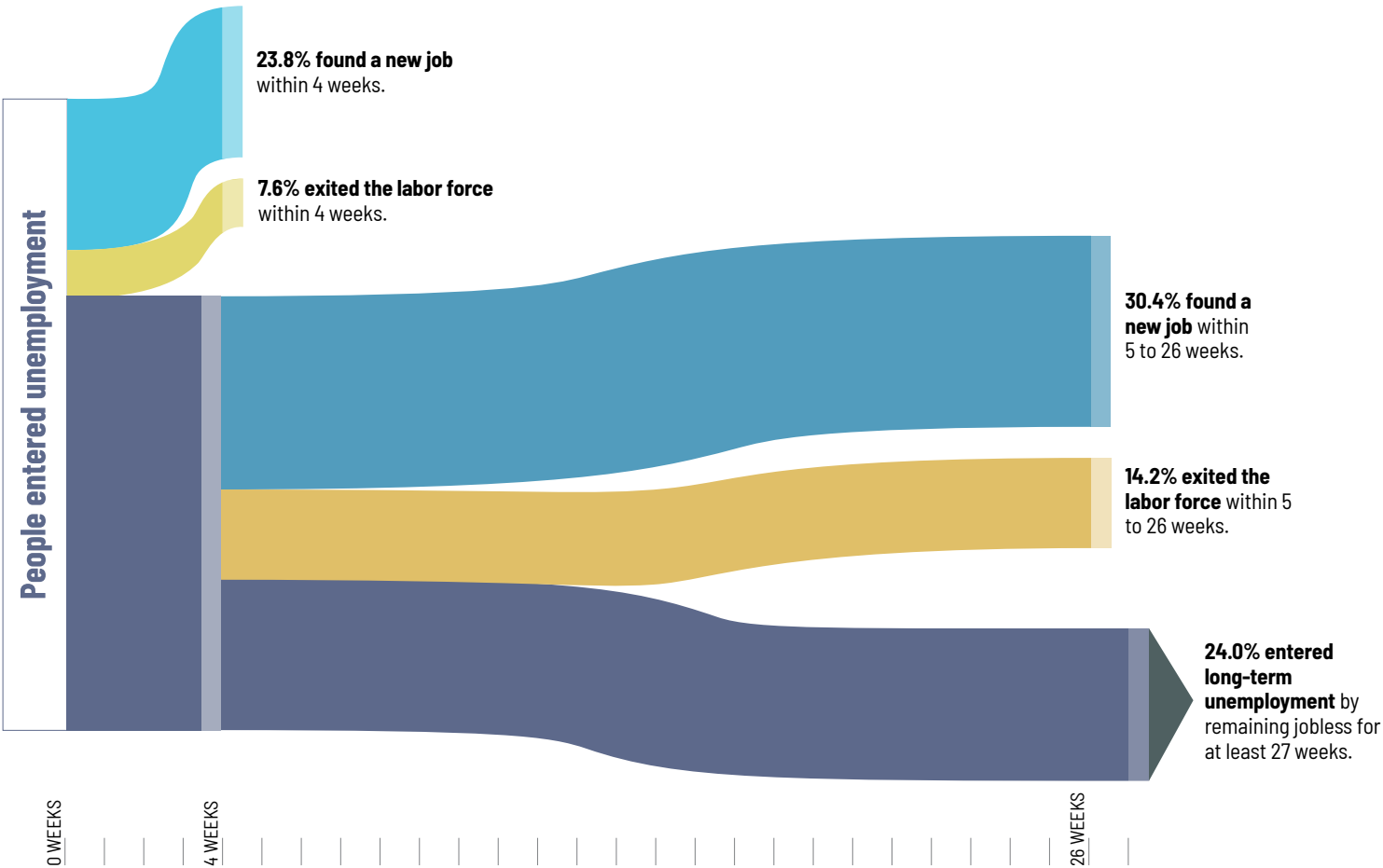
THE JOURNEY
TO LONG-TERM
UNEMPLOYMENT

When a worker is out of a job, they face a decision about whether to search for a new one. Active job seekers are classified as “unemployed,” while those who stop searching are considered “out of the labor force.” After 26 weeks of job seeking, individuals become “long-term unemployed.”

Long-term unemployment can be a desperate situation. Benefits expire, savings deplete, and debts grow. Evidence shows that workers’ mental and physical health deteriorate during prolonged unemployment periods, creating additional barriers to reemployment.

What portion of unemployed workers eventually enter long-term unemployment? Our analysis of 2022 survey data reveals that 24 percent of unemployed workers remained jobless for six months or more, while around 50 percent took a job before then. The rest left the labor force—some within weeks, others after several months.

2022 UNEMPLOYMENT JOURNEY



Getting a job

In 2022, slightly more than half of people who found a new job within 6 months **took a job in an industry different from their last job.**

Leaving the labor force

About 1 in 5 unemployed people in 2022 who left the labor force did so because **they were discouraged by an unsuccessful job search.**

An equal share left the labor force because of **health concerns or childbirth.**

About 17% of labor force leavers **attended school.**

Reaching long-term unemployment

In August 2022, 1.2 million Americans had been unemployed for 27 weeks or longer. In **August 2025, the number was 1.9 million.**

ZOE STEIN, ANDREW GOODMAN-BACON, NINA LEO



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Sources: U.S. Census Bureau’s Survey of Income and Program Participation (SIPP). Sample universe is all respondents who became unemployed in 2022 and who were at least 18 years old when their unemployment period began. U.S. Bureau of Labor Statistics.

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“You have to be transparent not just after you made the decision, but also before you make the decision. Let people into the thought process... so they understand when you do make the decision, why you landed there.”

Institute advisor **Marianne Wanamaker** addresses leadership skills in an interview with the Women's Public Leadership Network. Wanamaker was the chief domestic economist at the White House Council of Economic Advisers from 2017 to 2018. She is currently professor of economics and dean of the Baker School of Public Policy and Public Affairs at the University of Tennessee.

JACK PARKER



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