FEDERAL RESERVE BANK PHILADELPHIA

# Economic Insights

Second Quarter 2022
Volume 7, Issue 2



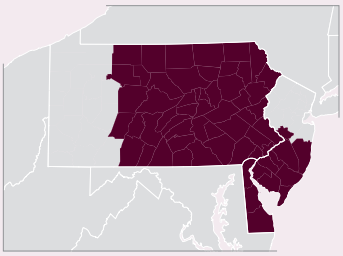
# Economic Insights

A publication of the Research Department of the Federal Reserve Bank of Philadelphia

*Economic Insights* features nontechnical articles on monetary policy, banking, and national, regional, and international economics, all written for a wide audience.



The Federal Reserve Bank of Philadelphia helps formulate and implement monetary policy, supervises banks and bank and savings and loan holding companies, and provides financial services to depository institutions and the federal government. It is one of 12 regional Reserve Banks that, together with the U.S. Federal Reserve Board of Governors, make up the Federal Reserve System. The Philadelphia Fed serves eastern and central Pennsylvania, southern New Jersey, and Delaware.



**Patrick T. Harker**
*President and Chief Executive Officer*

**Michael Dotsey**
*Executive Vice President and Director of Research*

**Adam Steinberg**
*Managing Editor, Research Publications*

**Brendan Barry**
*Data Visualization Manager*

**Kate Mattern**
*Graphic Design/Data Visualization Intern*

ISSN 0007–7011

## Connect with Us

**We welcome your comments at:**
PHIL.EI.Comments@phil.frb.org

**E-mail notifications:**
www.philadelphiafed.org/notifications

**Previous articles:**
www.philadelphiafed.org/economicinsights

**Twitter:**
@PhilFedResearch

**Facebook:**
www.facebook.com/philadelphiafed/

**LinkedIn:**
https://www.linkedin.com/company/philadelphiafed/

# Contents

Second Quarter 2022 Volume 7, Issue 2



## About the Cover

### Philadelphia from the Art Museum

The cover photo of Philadelphia encompasses almost every stage of the city's development. In the midground, partially obscured by the statue, is Logan Square, one of the five squares city founder William Penn and his surveyor, Thomas Holme, included in their 1687 city plan. In the distance looms City Hall, a testament to the post-Civil War boom; it was the tallest building in the world upon its completion in 1894. In the near distance is Rudolf Siemering's 1897 Washington Monument. The monument and City Hall are connected by the Benjamin Franklin Parkway, the City's post-World War I attempt to tame the unruly, industrial metropolis with open vistas, museums, and classical architecture. Starting in the 1970s, a downtown building boom led to the construction of numerous skyscrapers, visible to the right. Few images so fully convey Philadelphia's complex and varied history, culture, and economy.

Photograph by Brendan Barry.

# Q&A...

with Shigeru Fujita, an economist and economic advisor here at the Philadelphia Fed.

**Shigeru Fujita**

Among the Philadelphia Fed's research economists, economic advisor and economist Shigeru Fujita is unique in that he has worked at two central banks: the Bank of Japan from 1993 to 1999, and, since 2004, the Federal Reserve. In between, he earned a doctorate in economics from the University of California, San Diego (UCSD). He's particularly interested in understanding the causes and consequences of unemployment for individual workers and the economy as a whole.

**Where did you grow up?**
I'm from a small town in the west part of Japan where my parents ran a bakery.

**How did you come to study economics?**
In Japan, you have to apply to a certain department when you apply for college. I was interested in philosophy, but I did not get into my first-choice college, so I ended up studying economics and really liking it. After college, I got a job at the Bank of Japan. Although I wanted to do economic research, the Bank of Japan, like most Japanese companies, rotates employees around the whole organization. I was initially assigned to the Bank Supervision Department. Then I was at a local branch, asking businesspeople about local business conditions. Finally I was transferred to the Research and Statistics Department. That's when I got more serious about economic research. The Bank of Japan didn't have specialist economists like the Fed does, but they did have a scholarship to study economics in the U.S. My first year at UCSD was supported by the Bank of Japan. I had a very strong will to pursue a PhD because I was not really happy being moved around the departments. I thought, if I don't get a PhD, I will never develop my specialized human capital. But at the end of that first year, the Bank of Japan told me to come back. I didn't know which department I was going to return to, so, in the end, I decided to quit the Bank of Japan and stay at UCSD.

**Did your work at the Bank of Japan shape your interest in labor economics?**
Yes. As I said, large Japanese organizations tend to move their employees around the organization. This is a very different practice from the one in the U.S., where your career tends to be defined by your occupation or specialty. This stark difference is one of the reasons why I was so interested in labor economics. But I was also interested in the macro aspect of the labor market. In Japan, the unemployment rate is currently less than 3 percent, and it's never been much higher than 5 percent. In the U.S., on the other hand, you've had sharp recessions where the unemployment rate spiked above 10 percent. People suffered. I was curious about those differences, too.

**In this issue, you write about how well-paying jobs for Americans without a college degree are disappearing, leaving a gap between high-paying, highly educated workers and low-paid, less-educated workers. Does Japan have this problem too?**
This issue has been a big problem in the U.S. In Japan–although some measures, such as the unemployment rate, are lower–I think the situation is actually worse, because there is even less opportunity for some workers to improve their situation. If you graduate from a good college and land a full-time job at a big corporation, you have job security, even though your salary tends to grow only slowly. But if you graduated from college in, say, the late '90s, when the Japanese economy was doing really poorly, it was very hard to get that type of job. And if you don't get that job when you graduate, you'll never get it. There's a stigma against hiring those workers. Those unfortunates tend to switch between similar short-term contract jobs. So, your lifetime income depends heavily on when you enter the labor market, no matter what else you do. This is an unfair system in my opinion.

**What led you to become such a big fan of Manchester United? And has soccer taught you anything about economics (and vice versa)?**
I became a Manchester United fan because of the club's history and culture. Manchester United has traditionally promoted young players they train themselves, rather than buying expensive players from other clubs. You can invest a hundred million pounds in a particular player, or you can invest that hundred million pounds developing young players. So, running a big football club like Manchester United involves serious investment and labor market decisions accompanied by huge financial risks. Also, Manchester United had a legendary football coach for a long time, and he was an excellent manager of talented players. As a labor economist, I have been fascinated by this management aspect of the team's performance as well.

Photo: JannHuizenga/iStock

# Labor Market Recovery During the COVID-19 Pandemic

After most recessions, the labor market recovers slowly. Was the COVID-19 recession different?

**Shigeru Fujita**
Economic Advisor
and Economist
FEDERAL RESERVE
BANK OF PHILADELPHIA

*The views expressed in this article are not necessarily those of the Federal Reserve.*

The COVID-19 pandemic caused unprecedented disruptions to economic activities worldwide. The U.S. economy shrank more than 30 percent in the second quarter of 2020 (seasonally adjusted annualized rate), by far the largest decline in the post-WWII period (Figure 1). The labor market responded in kind: The unemployment rate spiked to 14.8 percent in April 2020 from 3.2 percent in February, and the economy shed a total of more than 22 million jobs during March and April.

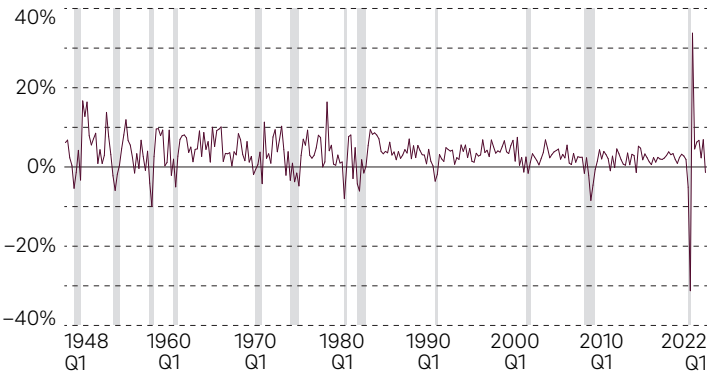
The trajectory of the economy since spring 2020, however, has been stronger than many had initially feared. According

FIGURE 1

**The COVID-19 Pandemic Resulted in a Historic Swing in GDP Growth**

GDP contracted at an unprecedented rate early in the pandemic but rebounded quickly afterward.

Real GDP growth (seasonally adjusted annualized rate), 1948–2022, quarterly




**Source:** Bureau of Economic Analysis (BEA).

**Notes:** Shaded areas represent recessions as determined by the National Bureau of Economic Research (NBER).

to the Philadelphia Fed's Survey of Professional Forecasters (SPF) released in the second quarter of 2020, the median forecasts for the unemployment rate for the final quarter of 2020 and the first quarter of 2021 were 11.0 percent and 9.3 percent; the actual values turned out to be 6.8 percent and 6.2 percent, respectively. In the previous three recessions, the unemployment rate declined by about 0.6 percentage point per year after hitting its recession peak. In the recent COVID-19 downturn, however, the unemployment rate fell about 10 percentage points in just the 18-month period from its peak in April 2020.

In this article, I first show that the U.S. labor market responded similarly during previous downturns: Workers faced a significantly higher chance of losing their job and a lower chance of being reemployed after the job loss. What's more, the job-finding rate after the job loss remained low for an extended period of time. I will argue that this persistently low job-finding rate represents the time-consuming and painful nature of labor reallocation, which in turn is associated with the acceleration of job polarization, or the disappearance of middle-class jobs.

The COVID recession was unique in that these traditional characterizations did not apply. As mentioned above, the unemployment rate fell much faster. Although the rate of job loss increased dramatically, it came down quickly, and the job-finding rate, on net, did not drop measurably over the course of the pandemic. Moreover, the pace of job switching without a jobless spell in between (the employer-to-employer transition rate) also held firm. This is unusual: During a typical downturn, the employer-to-employer rate falls significantly.

What made the COVID-19 recession different? And what does it tell us about future recessions? To find out, I describe the key characteristics of previous economic downturns. I first explain how these characteristics have contributed to job polarization. I also look closely at the relationship between preseparation earnings and the job-finding rate. I then explain why the COVID-19 recession differed from previous recessions along these dimensions. I conclude this article with some thoughts on how the COVID-19 recession may have permanently altered the labor market.

## Labor Market Recoveries from Previous Recessions

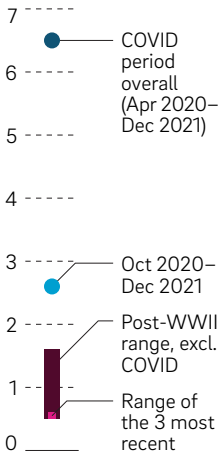
To understand why the COVID-19 recession was unique, we must first understand how the labor market recovered from previous recessions. For each economic downturn, there's an initial spike in the unemployment rate, followed by a gradual but consistent recovery (Figure 3).[1] During the entire post-WWII period excluding the COVID period, the pace of the recovery in the unemployment rate (expressed as the change per year) after reaching its peak in each recession ranged from 1.6 percentage points to 0.5 percentage point. For the most recent three recessions before COVID-19, the pace of the recovery is even more consistent, at 0.5–0.6 percentage point per year. But for the COVID-19 recession, the unemployment rate, which peaked at 14.8 percent in April 2020, fell by 10.9 percentage points to 3.9 percent over the following 20-month period through the end of 2021.[2] Much of this decline occurred during the initial six-month period between April 2020 and October 2020, when

FIGURE 2

### Unemployment Recovered Quickly After COVID

The recovery was much slower in previous recessions.

Pace of the decline in unemployment rate after a recession, percentage points per year, 1946–2021

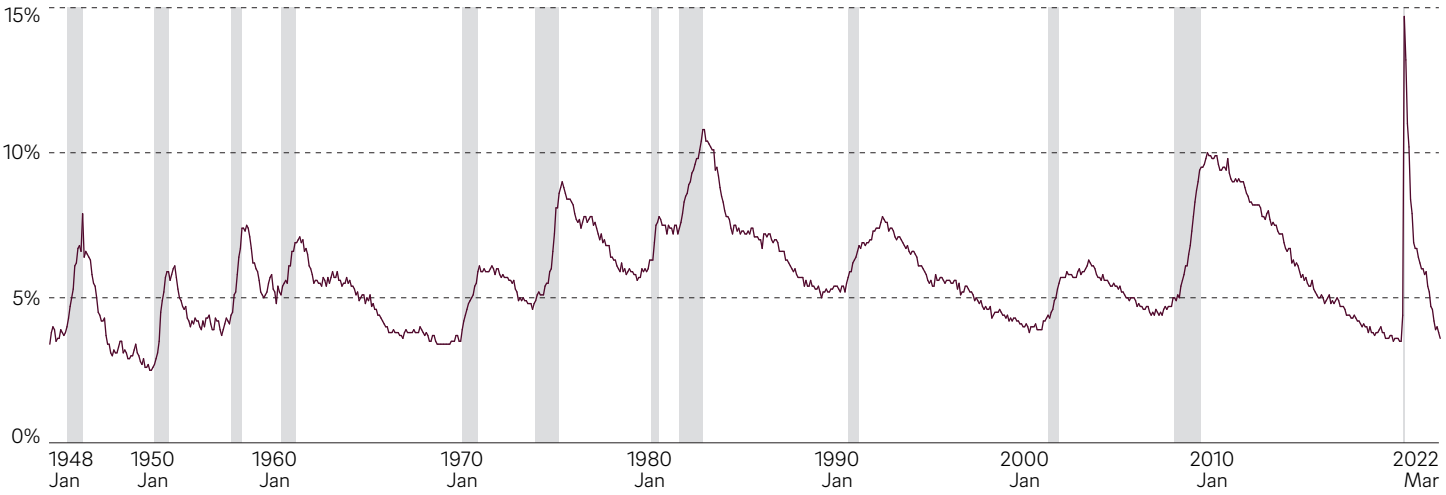



**Source:** Current Population Survey (CPS), U.S. Census Bureau and Bureau of Labor Statistics (BLS).

FIGURE 3

### For Each Recession, the Unemployment Rate Spikes and Then Gradually Falls

Unemployment rate, 1948–2022, monthly




**Source:** Current Population Survey (CPS), U.S. Census Bureau and Bureau of Labor Statistics (BLS).

**Notes:** Shaded areas represent recessions as determined by the National Bureau of Economic Research (NBER).

the unemployment rate fell by 7.9 percentage points, from 14.8 percent to 6.9 percent, but the jobless rate dropped an additional 4.3 percentage points through the end of 2021. The decline in this latter period translates into 2.6 percentage points per year, which is the fastest in the post-WWII period (Figure 2).[3]

The unemployment rate fluctuates for various underlying reasons. One way to dig deeper into these underlying reasons is to look at the flow of workers into and out of unemployment. There are three labor market "states" as defined by the Bureau of Labor Statistics (BLS): employed, unemployed, and not in the labor force. The number of people who are unemployed (defined as those who are jobless and looking for work) changes when individuals in the other two states move into the unemployed state and when those in the unemployed state move into one of the other two states. In particular, research about U.S. recessions since the late 1970s shows that transitions between the employed and unemployed states generally play a major role in the cyclical movements in the unemployment rate.[4] I therefore discuss the previous cyclical patterns of these transition rates. This allows me to highlight the peculiarities of the labor market responses during the COVID-19 pandemic.

The transition rate from employment to unemployment, also known as the job-loss rate, represents the rate at which employed workers, on average, lose their jobs and flow into the pool of unemployed workers. Increases in this rate lead to higher unemployment. In every previous recession since the late 1970s, the transition rate exhibited the same pattern: It increased at the onset of the downturn and then fell. Meanwhile, at the start of every downturn, the transition rate from unemployment to employment—that is, the rate at which jobless workers find new jobs (also known as the job-finding rate)—plummeted and then recovered only gradually. All of the past recessions exhibit this same pattern (Figure 4). In the initial phase of a downturn, the job-loss rate increases and the job-finding rate plummets, whereas in the recovery phase, both of these rates gradually revert to normal levels. Moreover, each rate recovered at a similar pace across recessions. As I discuss later in this article, however, these two transition rates behaved quite differently in the COVID-19 recession.

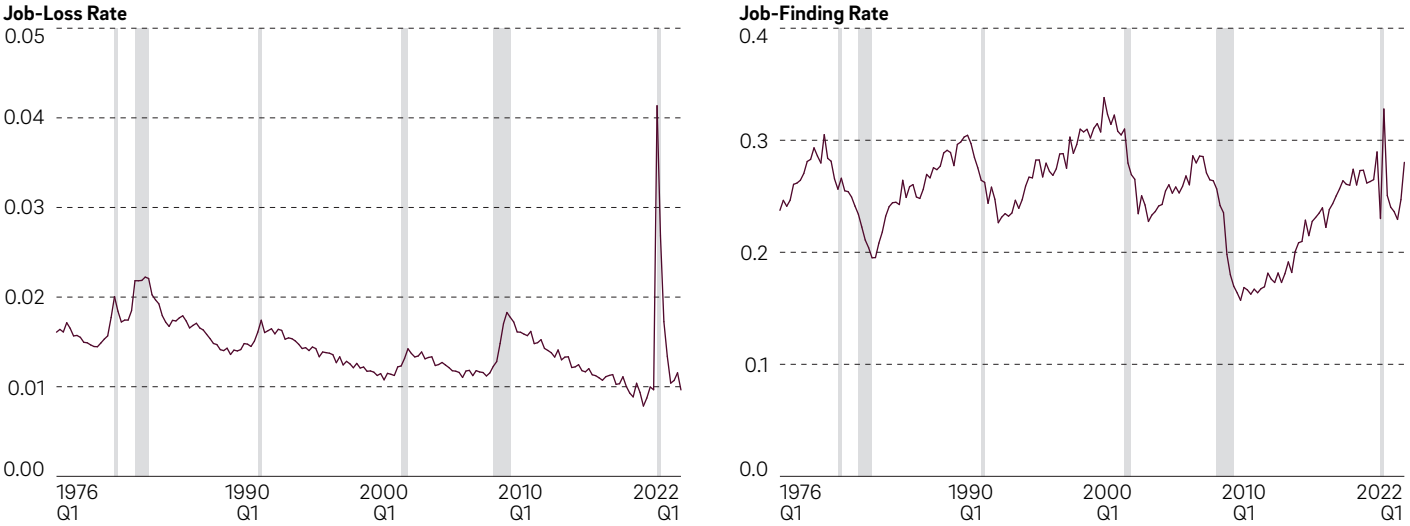
Now that we understand how the labor market typically responds to a recession, we can recognize how recessions accelerate labor reallocation. During a typical recession, the higher job-loss rate suggests that some of the existing jobs are no longer viable and thus workers in those jobs face a higher risk of job loss. Those workers eventually need to be reallocated to jobs that are still viable. In this sense, the higher job-loss rate during downturns implies that the economy is facing more pressure of labor reallocation. On the other hand, the lower job-finding rate, which means that it takes more time to find a new job, implies that reallocation is more difficult during a downturn. For both of these reasons, the unemployment rate increases, and the gradual recovery of the job-finding rate exemplifies the time-consuming and painful nature of labor reallocation. Although some workers may quickly land a new job that's to their liking, it takes a long time for many other workers to find a new job, and they often end up in a job that pays less, sometimes significantly less, than their previous job. In the following section, I relate the painful experience associated with labor market reallocation to the phenomenon known as job polarization. Doing so will help us evaluate the labor market responses to the COVID-19 recession.

**FIGURE 4**

## Except for the COVID-19 Recession, the Job-Loss and Job-Finding Rates Have Had Similar Responses During Economic Downturns

In the past, both rates recovered only gradually after sharply responding initially.

Transition rates between employment and unemployment, 1976–2022, quarterly averages of monthly rates




**Source:** Current Population Survey (CPS), U.S. Census Bureau and Bureau of Labor Statistics (BLS), author's calculation from the public-use microdata.

**Note:** Shaded areas represent recessions as determined by the National Bureau of Economic Research (NBER).

## Job Polarization and Restructuring

According to many economists, an important labor market trend in the past several decades is job polarization, characterized by an increase in the shares of high- and low-wage jobs among the employed, and a declining share of middle-wage jobs.[5]

Economists often divide occupations into four broad categories based on their tasks: routine manual, routine cognitive, nonroutine manual, and nonroutine cognitive. Routine manual occupations include manufacturing and construction jobs. Routine cognitive occupations include sales jobs and administrative support jobs. Nonroutine manual occupations include service jobs in leisure and hospitality industries, which were heavily affected by the pandemic. Nonroutine cognitive occupations include many high-skilled jobs, such as those found in management, engineering, and financial operations. The third and fourth categories on average encompass low- and high-wage occupations, respectively. The first two categories (both of which are routine) encompass middle-wage jobs.

When we plot the employment levels of these four occupation groups over time, we can make several observations that confirm that the labor market has long been characterized by job polarization (Figure 5). First, nonroutine cognitive jobs have been on the rise, though the increase slows occasionally, typically during an economic downturn. Similarly, the other nonroutine jobs, the manual ones, have increased over the last four decades, too. The increase between the mid-2000s and 2019 is particularly noticeable. In contrast, routine jobs have trended downward. The downward trend in routine manual jobs is particularly steep, and that downward trend accelerates in downturns.

Another important pattern emerges when we express the size of each occupation group as the shares within employment and unemployment (Figure 7). Because individuals in the unemployment pool are currently jobless, the count of workers in that pool is based on their occupation in their most recent jobs. Over the last four decades, the shares of routine jobs within employment have been steadily falling, while the shares of nonroutine jobs have been rising. However, the employment shares are quite different from the unemployment shares. For example, at the beginning of the sample period, the employment share of routine manual workers was about 35 percent, whereas, within unemployment, the share was much higher. The opposite pattern holds for nonroutine cognitive workers. These patterns indicate that routine manual workers face a higher risk of job loss and move to different occupations or stay unemployed longer, while nonroutine cognitive workers face a lower risk of job loss and find new jobs more quickly even when they are jobless.

Additionally, the share of routine manual workers in the unemployment pool tends to increase in recession periods, while the share of nonroutine manual workers in unemployment is procyclical. This contrasting pattern indicates that recessions have traditionally been particularly challenging for routine manual workers. This cyclical pattern holds for every recession since the late 1970s, except for the COVID-19 recession, in which nonroutine manual jobs (specifically those in leisure and hospitality industries) were severely impacted, while routine manual occupations fared relatively better.

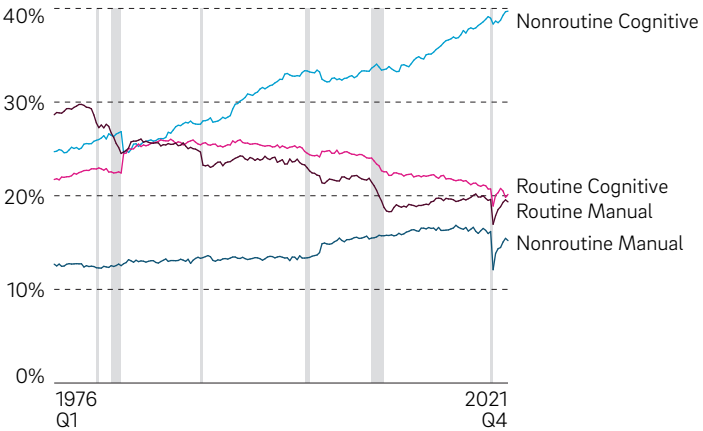
When we relate these employment/unemployment patterns to each occupation group's average education, nonroutine cognitive

FIGURE 5

### The Labor Market Has Long Been Characterized by Job Polarization

The downward trend in routine manual jobs is particularly steep, and that trend accelerates in downturns.

Employment levels by occupation groups, 1976–2021, quarterly average




**Source:** Current Population Survey (CPS), U.S. Census Bureau and Bureau of Labor Statistics (BLS), author's calculation from the public-use microdata.

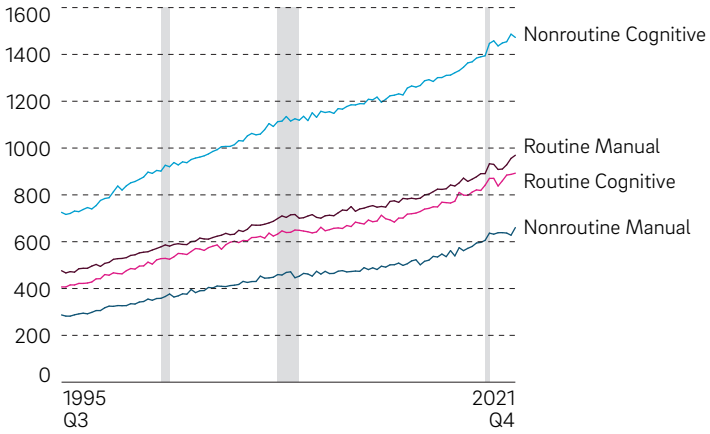
**Notes:** Expressed as shares of population aged 16 and above. Shaded areas represent recessions as determined by the National Bureau of Economic Research (NBER).

FIGURE 6

### Routine Manual Workers Earn More on Average Than Nonroutine Manual Workers

But their earnings growth has lagged.

Weekly earnings by occupation group, dollars, 1995Q3–2021, quarterly averages




**Source:** Current Population Survey (CPS), U.S. Census Bureau and Bureau of Labor Statistics (BLS), author's calculation from the public-use microdata.

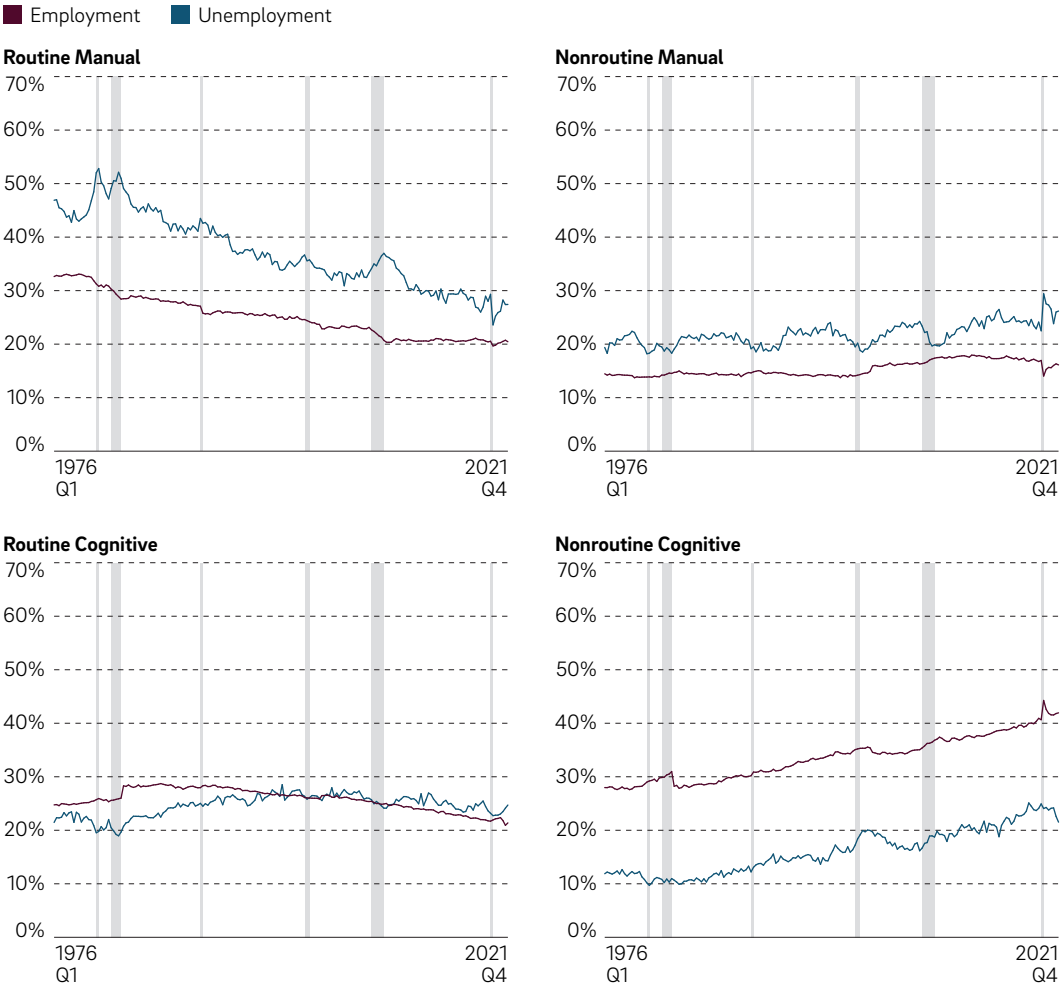
**Note:** Shaded areas represent recessions as determined by the National Bureau of Economic Research (NBER).

FIGURE 7

## Routine Manual Workers Usually Suffer More During Recessions

By contrast, nonroutine cognitive workers face a lower risk of job loss and find new jobs more quickly even when they are jobless.

Shares of occupation groups within employment and unemployment 1976–2021, quarterly average




**Source:** Current Population Survey (CPS), U.S. Census Bureau and Bureau of Labor Statistics (BLS), author's calculation from the public-use microdata.

**Notes:** Long-term unemployment includes those who are unemployed 27 weeks or longer. Shaded areas represent recessions as determined by the National Bureau of Economic Research (NBER).

jobs are, not surprisingly, occupied by the most-educated workers, while routine manual workers are the least educated. Despite having the lowest average education, routine manual workers on average make the second-highest wage earnings, although their earnings have not grown as much over the last few decades (Figure 6).[6]

## Earnings and Job-Finding Rates

The previous analysis shows that those who are employed at routine manual jobs have faced particularly challenging conditions, especially during recessions, over the last several decades. Although, relatively speaking, their earnings prior to job loss tended to be high, job loss for these workers has serious consequences for their lifetime earnings as they "fall off the career ladder." That is, a worker doesn't just lose their income during the jobless spell. Even when they manage to find new employment, they tend to end up on a lower rung of the career ladder, in a job that pays significantly less than their previous job. Furthermore, climbing the ladder again takes a long time. Thus, a job loss can make a significant dent in the worker's lifetime earnings. This empirical pattern is well documented in the literature.[7]

As mentioned above, the slow recovery of the rate at which workers exit the unemployment pool exemplifies the painful nature of labor reallocations during a typical downturn. Considering this pattern, one can imagine a situation where workers who had made middle-class earnings prior to job loss struggle to find a similar job and eventually have to take a lower-paid job.

To find out if there is a relationship between the job-finding rate and workers' earnings level prior to job loss, let's look at how average earnings of the unemployed (prior to job loss) change over the business cycle.[8] The average earnings of recent job losers, expressed as the ratio to the average earnings of all workers, increase in downturns—except during the COVID downturn (Figure 8). This series shows that the earnings of the unemployed tend to be lower than the overall average (as the series always fluctuates below 1), but the ratio is countercyclical, going up to around 0.9 during downturns. This pattern can be understood thusly: Those with lower earnings tend to face a higher risk of job loss on average, but, during the downturn, the risk of job loss expands to those who made higher earnings.[9]

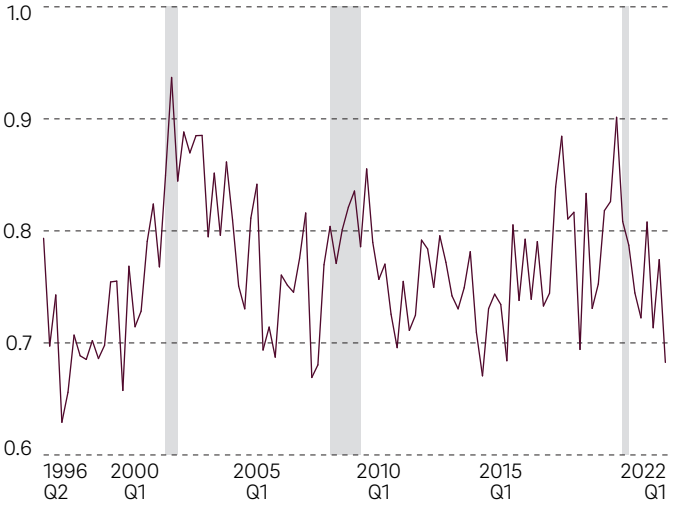
Because the job-finding rate is strongly procyclical, this evidence suggests that the job-finding rate and earnings prior to job loss are negatively related—that is, one rises when the other falls, and vice versa. Does this mean that higher earnings at the previous job somehow causes those workers to find a new job more slowly? Not necessarily. These two series are aggregate statistics, and both could be driven by the economy's overall labor

FIGURE 8

## Recessions Are Usually When the Risk of Job Loss Expands to Those Who Earn More

Except for the COVID-19 recession, average earnings of recent job losers increase in downturns.

Preseparation weekly earnings of job losers relative to average of all workers, 1996–2022




**Source:** Current Population Survey (CPS), U.S. Census Bureau and Bureau of Labor Statistics (BLS), author's calculation from the public-use microdata.

**Notes:** Based on weekly earnings of those who are unemployed in their fifth interview and employed in their fourth interview. Shaded areas represent recessions as determined by the National Bureau of Economic Research (NBER).

demand condition. Indeed, a standard labor search model predicts that these two series are negatively correlated even though the level of an individual's earnings has no predictive power for their subsequent job finding in that model.[10] Nonetheless, one can think of several underlying reasons (absent from the standard model) why individuals who earned more take longer to find a new job. For example, those who make more are likely to be wealthier, giving them the economic cushion they need to spend more time searching for the best possible job. Or maybe these workers were compensated for specific skills; once a high-skilled job is lost, it is difficult to find a job that pays the same for those specific skills.

A statistical tool (regression analysis) allows me to isolate how an individual's preseparation relative earnings affect the individual's job-finding outcome after controlling for the overall macroeconomic conditions. The regression analysis reveals that when the earnings ratio increases by 1 standard deviation, the job-finding rate falls by almost 0.05. The average level of the earnings ratio over the full sample is 0.56, and 1 standard deviation is 0.32. The overall job-finding rate fluctuates around 0.25. Thus, the 0.05 decline implies that the chance of finding a new job declines by about 20 percent (that is, 0.05/0.25).[11]

The regression result indicates that there could be a causal relationship between higher earnings and a lower chance of finding a job. This relationship fits the narrative that those who were paid relatively well before losing their job struggle to find a new job. The regression result does not speak to whether or not these workers end up in a lower-paid job. However, if they were previously on a higher rung of the ladder, it is more likely that they end up on a lower rung of the ladder. In contrast, if a worker was already being paid minimum wage, their wage, in principle, cannot go any lower. This last point is relevant to an evaluation of the labor market recovery during the COVID-19 pandemic.

## The COVID-19 Recession

How did the labor market respond to the pandemic? As we saw above, the pandemic led to a dramatic spike in the job-loss rate, resulting in an equally dramatic increase in the unemployment rate. The job-finding rate, however, was relatively stable, especially early in the pandemic. This pattern is quite different from previous recessions. This peculiarity may not be surprising, given that the huge spike in the job-loss rate was due to the pandemic and the associated government-ordered business closures. Many of these job losses were thus temporary, and in fact a large share of the suspended jobs was subsequently reactivated, and workers were accordingly recalled to their jobs. In fact, a recent paper estimates that the share of recalls in the second quarter of 2020 increased to about 75 percent.[12] Typically, a higher job-loss rate during a downturn implies intensified pressure of labor reallocation, as discussed above. However, at least in the early stage of the pandemic, a higher job-loss rate was not a result of intensified reallocation forces but instead of a temporary suspension of business activities.

And yet, even apart from the first phase of the pandemic, the labor market dynamics differ from previous recessions. Even though the initial wave of recalls was presumably completed by the fall of 2020, the pace of the decline in the unemployment rate thereafter was measurably faster than after previous recessions. The job-finding rate stayed high in the initial phase of the pandemic on net, mainly because a large number of recalls are counted as "job finding." In 2021, this rate declined several percentage points, but it has quickly recovered since then. During the Great Recession (2007–2009), in contrast, the job-finding rate fell by about 12 percentage points from the prerecession peak to its bottom. As noted earlier, the persistently low job-finding rate typically observed in a downturn exemplifies the difficult and painful nature of labor reallocation, but during the COVID pandemic, the pace of reallocation, as measured by the job-finding rate, did not slow down as much as during previous downturns.

One reason for the milder decline in the job-finding rate—and perhaps for the quicker recovery—is that COVID's impact on the labor market was heavily concentrated in nonroutine manual occupations and in a few sectors, such as leisure and hospitality.

To see the implications of this fact, recall that previous recessions were characterized by the accelerated restructuring of routine occupations, and this restructuring process is time-consuming and painful for affected workers, particularly because it often involves falling off the career ladder, resulting in a decline in earnings. But the COVID-19 recession was different. The most severely impacted occupations were nonroutine manual. Nonroutine manual jobs tend to be low wage (in fact, the lowest paid, on average, among the four broad occupation groups).

Even though this made the pandemic even more difficult than it already was, potentially exacerbating income inequality, low-wage workers tended to find jobs more quickly. This is partly because there are fewer skill requirements for those jobs, but also because the pandemic forced the economy to adapt to a new environment, creating new job opportunities. For example, employment at nonstore retailers (such as direct marketers and vending-machine operators) grew strongly after a brief decline early in the pandemic, and some subcategories of the transportation and warehousing industry followed a similar path. These expanding sectors of the economy do not necessarily require more advanced skills, so there was less of a skill mismatch between the unemployed and the available jobs, which was a serious problem in the post-Great Recession period.[13]

As of the end of 2021, the employment levels and the labor force participation rate were still below their prepandemic levels. However, assessing the strength of the labor market under COVID based on these variables is difficult, because there were several factors holding back labor supply, including a fear of contracting COVID-19, expanded unemployment insurance (UI) coverage, and an accelerated flow of retirements.[14] The movement of the unemployment rate is not necessarily immune to the impact of these labor supply constraints, either. But the measurement of the job-finding rate is unlikely to be biased up due to the labor supply factors.

The discussion so far has focused on labor reallocations through a jobless spell, but reallocations can occur without a jobless spell, namely through employer-to-employer (E2E) transitions. In a recent paper, my coauthors and I developed a new measure of the E2E transition rate.[15] This measure, which is also based on the Current Population Survey (CPS),[16] generally moves procyclically. For example, in the post-Great Recession period, it fell about 20 percent, which suggests a significant slowdown of worker reallocations through E2E transitions. But the E2E transition rate declined only briefly early in the pandemic and bounced back in the fall of 2020. The E2E level as of mid-2021 was roughly the same as its prepandemic level (Figure 9).

Note that when a worker moves from one employer to another, the move in itself does not change the overall employment level, whereas the hiring of a jobless worker moves a worker from unemployment to employment, thus contributing to the overall employment level. However, when an E2E transition occurs, the worker tends to earn more and be more productive at a new employer. The transition could also create a new job opening (at the employer that the worker left), which can create a new job opportunity for someone who is currently jobless.

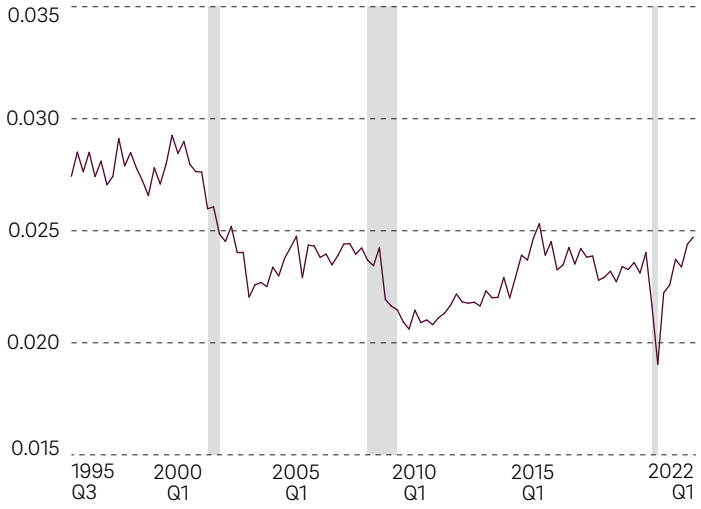
Of course, not all E2E transitions result in productivity increases and wage gains. In particular, a worker, knowing that they will soon be laid off, may decide to move to a new employer, even though the move may not necessarily result in higher earnings or a career progression. This transition is unlikely to create an open position for someone else to fill. Still, even this E2E transition means that the worker avoids joblessness, ensuring that this worker does not contribute to a higher unemployment rate. In any case, the fact that the E2E transition rate remained

FIGURE 9

## Unlike During Previous Recessions, the E2E Transition Rate Bounced Back During COVID

This likely contributed to the labor market's resiliency during the pandemic recession.

Employer-to-employer transition rate, quarterly averages of monthly rates, 1995–2022




**Source:** Current Population Survey (CPS), U.S. Census Bureau and Bureau of Labor Statistics (BLS), author's calculation from the public-use microdata.

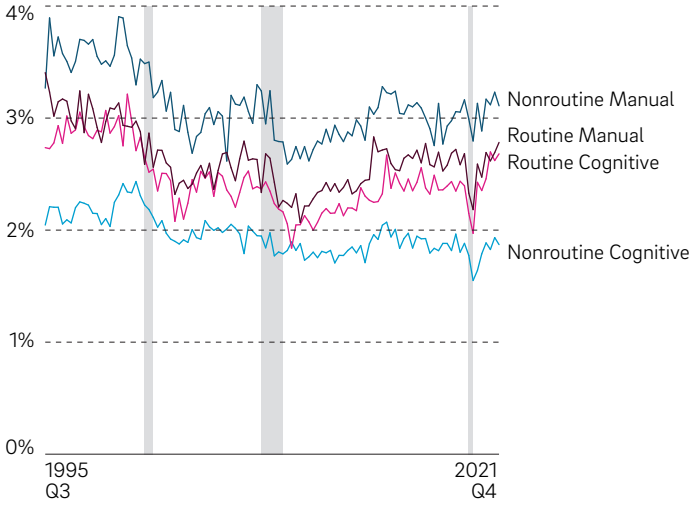
**Notes:** See Fujita et al. (2021) for data construction details. Shaded areas represent recessions as determined by the National Bureau of Economic Research (NBER).

FIGURE 10

## The E2E Transition Rate Recovered Quickly for All Occupation Groups During COVID

Nonroutine manual occupations have the highest E2E rate. It has not been affected much by the pandemic.

Employer-to-employer transition rate by occupation group, 1995–2021




**Source:** Current Population Survey (CPS), U.S. Census Bureau and Bureau of Labor Statistics (BLS), author's calculation from the public-use microdata.

**Notes:** See Fujita et al. (2021) for data construction details. Shaded areas represent recessions as determined by the National Bureau of Economic Research (NBER).

firm indicates that the labor market remained resilient during the COVID-19 downturn.

For each of the four broad occupation groups, the E2E transition rate remained firm throughout the pandemic, although it initially fell for all groups (Figure 10). In addition, there are two important patterns to these rates. First, nonroutine manual occupations, which on average pay the lowest wages, almost always have the highest E2E transition rate, while nonroutine cognitive occupations, which on average pay the highest wages, have the lowest E2E transition rate. The other two (routine) categories have similar E2E rates; their earnings levels are not far apart either, as shown earlier. These relationships are consistent with the relationship between the job-finding rate from unemployment and the earnings levels—that is, it is harder to move to a new job when you're looking for a job with more specific skill requirements. Second, the E2E transition rate of workers in nonroutine manual occupations, many of which are contact-intensive, appears to have been least affected by the pandemic. This is notable because that group was most severely affected by the pandemic. The strength of E2E transitions from these occupations implies that at least some of these workers were able to avoid job losses, albeit most likely by moving to other low-wage jobs.[17]

## Summary and Implications

The U.S. labor market has recovered from past downturns at a consistent but gradual pace. This gradual recovery of the labor market is a manifestation of the slow pace at which jobless workers are reallocated to different jobs. Moreover, the reallocation process tends to be exacerbated by the long-term declining trend in middle-class jobs.

The COVID-19 recession is different in that nonroutine manual service jobs, which have become more prevalent over the past few decades, were the ones most severely affected, while the manufacturing sector, which employs a large number of routine manual jobs, performed relatively well. The fact that low-wage jobs were more adversely affected made the COVID-19 recession even more painful, potentially exacerbating income inequality. But the same fact suggests that there will be a quicker recovery of the labor market, especially when new job opportunities for unskilled workers arise in other parts of the economy. Consistent with this prediction is the behavior of both the E2E transition rate and the job-finding rate from the unemployment pool during the pandemic.

However, the labor market is likely to be permanently different even after the current public health crisis is over. Although new job opportunities are popping up in various economic sectors, overall labor demand for low-wage jobs may turn out to be insufficient, and thus some workers may find it difficult to find even a low-wage job. For example, "telepresence" could significantly reduce demand for personal and business services.[18] The new trend could further encourage investment in labor-saving technology, reducing overall labor demand even in low-wage service industries. Thus, policymakers still need to pursue economic policies that support workers' skill development and education.

## Notes

**1** See Hall and Kudlyak (2021) for the consistent pace of the labor market recoveries from the previous recessions.

**2** This amounts to an annualized pace of 6.5 percentage points.

**3** The U.S. Bureau of Labor Statistics reported in the early months of the pandemic that some workers were misclassified as employed instead of unemployed, underestimating the true unemployment rate. This measurement problem gradually faded over the following several months. Thus, using the "true" measure only accelerates the pace of the recovery.

**4** See, for example, Fujita and Ramey (2009) and Shimer (2012).

**5** See Autor et al. (2006) and Autor (2010) for general discussions on job polarization.

**6** When we rescale the earnings levels plotted in Figure 5 by normalizing them at 100 as of 1995, we see that the earnings growth of routine manual workers lagged behind. In contrast, average earnings among nonroutine manual workers have increased much more, even more than nonroutine cognitive occupations, at least over the last 25 years.

**7** See, for example, Jacobson et al. (1993) and Davis and Von Wachter (2011).

**8** The series is calculated from the Current Population Survey (CPS). The survey structure does not allow me to observe earnings immediately prior to the job loss. The series is instead based on the earnings of those who are reported to be unemployed in their fifth month of the survey and employed nine months prior to the fifth survey.

**9** This empirical pattern has been known since Mueller (2017).

**10** See Mortensen and Pissarides (1994).

**11** A 1 standard deviation increase means that the earnings ratio increases from the 50th percentile to the 84th percentile in the distribution of the relative earnings ratios.

**12** See Ganong et al. (2021). In Fujita and Moscarini (2017), we show that recalls are actually common: On average, more than 40 percent of

hires from unemployment can be recalls. But the share of recalls during the pandemic was particularly high.

**13** For example, Kocherlakota (2010) emphasizes the role of mismatch—in terms of geography, skills, and demographics—in keeping the unemployment rate from falling.

**14** Ganong et al. (2020) report that between April and July 2020, 76 percent of workers who were eligible for the regular Unemployment Compensation program were entitled to receive benefits that exceeded lost wages. This calculation includes the Federal Pandemic Unemployment Compensation (FPUC) supplement, which amounted to $600 per week. The supplement was then reduced to $300 per week until it expired in September 2021. Even after the amount was reduced, it is likely that the share remained substantial.

**15** See Fujita et al. (2021).

**16** Fallick and Fleischman (2004) originally developed a measure of E2E transitions based on a survey question in the CPS that asks whether or not a worker moved to a new employer. In our paper, however, we show that their measure is biased downward due to missing answers to the survey question. We propose a methodology that corrects the bias. The series is updated monthly and available at https://sites.google.com/view/shigeru-fujita/data.

**17** Another interesting development unique to the COVID downturn, as reported by Haltiwanger (2021), is that there was a large increase in new business applications. This increase sharply contrasts with the pattern in the Great Recession, when new business applications declined sharply and persistently. In line with this observation is the increase in the share of self-employment in 2020–2021.

**18** Autor and Reynolds (2020) discuss various possibilities in this regard.

## References


Autor, David. "The Polarization of Job Opportunities in the U.S. Labor Market," The Center for American Progress and The Hamilton Project (2010).

Autor, David, and Elisabeth Reynolds. "The Nature of Work After the COVID Crisis: Too Few Low-Wage Jobs," *The Hamilton Project Essay 2020-14* (2020).

Autor, David, Lawrence Katz, and Melissa Kearney. "The Polarization of the U.S. Labor Market," *American Economic Review Papers and Proceedings*, 96:2 (2006), pp. 189–194.

Davis, Steven, and Till von Wachter. "Recessions and the Costs of Job Loss," *Brookings Papers on Economic Activity* (fall 2011), pp. 1–72.

Fallick, Bruce, and Charles Fleischman. "Employer-to-Employer Flows in the U.S. Labor Market: The Complete Picture of Gross Worker Flows," Federal Reserve Board Finance and Economics Discussion Series 2004-34 (2004).

Fujita, Shigeru, and Garey Ramey. "The Cyclicality of Separation and Job Finding Rates," *International Economic Review*, 50:2 (2009), pp. 415–430, https://doi.org/10.1111/j.1468-2354.2009.00535.x.

Fujita, Shigeru, and Giuseppe Moscarini. "Recall and Unemployment," *American Economic Review*, 107:12 (2017), pp. 3875–3916, https://doi.org/10.1257/aer.20131496.

Fujita, Shigeru, Giuseppe Moscarini, and Fabien Postel-Vinay. "Measuring Employer-to-Employer Reallocation," Federal Reserve Bank of Philadelphia Working Paper 21-22 (2021), https://doi.org/10.21799/frbp.wp.2021.22.

Ganong, Peter, Fiona Greig, Max Liebeskind, et al. "Spending and Job Search Impacts of Expanded Unemployment Benefits: Evidence from Administrative Micro Data," Becker Friedman Institute Working Paper 2021-19 (2021).

Ganong, Peter, Pascal Noel, and Joseph Vavra. "U.S. Unemployment Insurance Replacement Rates During the Pandemic," *Journal of Public Economics*, 191 (2020), p. 1–12, https://doi.org/10.1016/j.jpubeco.2020.104273.

Hall, Robert, and Marianna Kudlyak. "Why Has the U.S. Economy Recovered So Consistently from Every Recession in the Past 70 Years?" in Martin S. Eichenbaum and Erik Hurst, eds., *NBER Macroeconomics Annual 2021*, University of Chicago Press, 2021, pp. 1–55.

Haltiwanger, John. "Entrepreneurship During the COVID-19 Pandemic: Evidence from the Business Formation Statistics," National Bureau of Economic Research Working Paper 28912 (2021), https://doi.org/10.3386/w28912.

Jacobson, Louis, Robert LaLonde, and Daniel Sullivan. "Earnings Losses of Displaced Workers," *American Economic Review*, 83:4 (1993), pp. 685–709.

Kocherlakota, Narayana. "Back Inside the FOMC," speech given in Missoula, Minnesota, September 8, 2010.

Mortensen, Dale, and Christopher Pissarides. "Job Creation and Job Destruction in the Theory of Unemployment," *Review of Economic Studies*, 61:3 (1994), pp. 397–415, https://doi.org/10.2307/2297896.

Mueller, Andreas. "Separations, Sorting, and Cyclical Unemployment," *American Economic Review*, 107:7 (2017), pp. 2081–2107, https://doi.org/10.1257/aer.20121186.

Shimer, Robert. "Reassessing the Ins and Outs of Unemployment," *Review of Economic Dynamics*, 15:2 (2012), pp. 127–148, https://doi.org/10.1016/j.red.2012.02.001.

Photo: Sven-Erik Sjoberg/DN/TT/alamy

# Politics and Income Distribution

We take a closer look at how political reforms affect labor's share of national income.

**Thorsten Drautzburg**
Economic Advisor and Economist
FEDERAL RESERVE BANK OF PHILADELPHIA

**Jesús Fernández-Villaverde**
Professor of Economics
THE UNIVERSITY OF PENNSYLVANIA

**Pablo Guerron-Quintana**
Professor of Economics
BOSTON COLLEGE

*The views expressed in this article are not necessarily those of the Federal Reserve.*

Macroeconomic policy is typically tasked with stabilizing the economy to soften the effects of downturns, and with providing an environment that allows for sustained economic growth. But, as the recent debate about the role of monetary policy and economic inequality shows, macroeconomic policy can also affect inequality, and policymakers may wish to take this into account.[1]

In this article, we focus on one aspect of inequality: how income is split between capital and labor. Labor income includes wages and salaries, but also various benefits paid for by employers. Capital income is all nonlabor income: pure profits as well as rent paid for the use of capital.[2] Because capital ownership is concentrated, the division of income between capital and labor also affects income inequality.[3] We focus on the capital share, because capital share data, unlike other measures of inequality, are available in many countries over long periods of time. Moreover, the capital share of income is crucial for the incentives of investors: A drop in the capital share can lower profits even when overall income rises.

In line with the general idea that policy can affect inequality, we document that the political process is an important driver of the distribution of income between capital and labor. Sometimes, policies are targeted to redistribute income. Examples include changes to the minimum wage or collective bargaining rules. Other policies may redistribute income inadvertently,

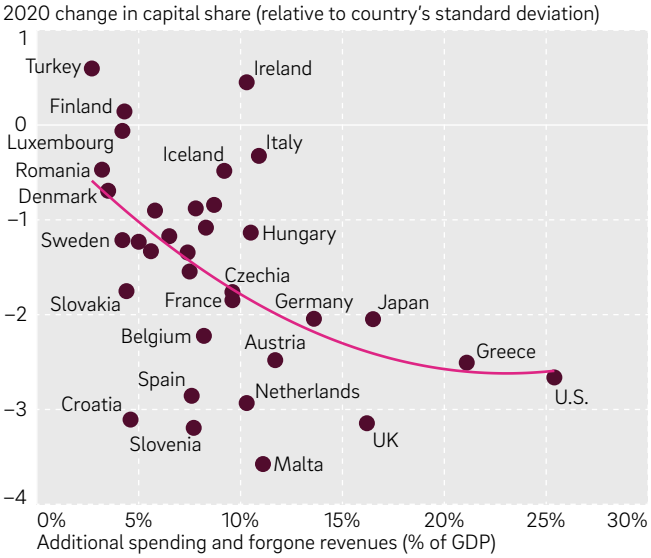
perhaps as a side effect of big policy interventions. To illustrate the idea that big policy interventions often redistribute income, it is natural to turn to the largest government interventions in recent history: The fiscal policy response to the COVID-19 pandemic.

Each country's fiscal policy response to the pandemic was designed to stabilize that country's economy, but these responses also redistributed income between capital and labor, probably inadvertently. Countries around the world responded to the pandemic with fiscal policy interventions on an unprecedented scale, as documented by the International Monetary Fund (IMF).[4] Even if we exclude unconventional fiscal policies with unclear costs such as credit guarantees,[5] many advanced economies spent more than 5 percent of gross domestic product (GDP) on additional spending or forgone revenue, with the U.S. spending as much as 25 percent of GDP (Figure 1). This spending has also been associated with sizable decreases in the capital share of income—that is, the fraction of national income that is compensation for capital.[6] In the U.S., the capital share in 2020 fell by 2.7 standard deviations—that is, it fell 2.7 times as much as the size of a typical one-year change in the capital share in the U.S. Romania, which spent 3 percent of GDP on fiscal policy interventions, saw its capital share decrease by only 0.5 standard deviation. On average, a country that had 10 percent higher spending relative to GDP had a capital share in 2020 that was 0.25 standard deviation lower. Cross-country variation in fiscal policies explains 26 percent of the cross-country variation in the change in the capital share.

FIGURE 1

**Larger Fiscal Policy Responses to COVID-19 Were Associated with Larger Declines in Capital's Share of Income**

Size of conventional fiscal stimulus in 2020 and changes in capital shares across countries




**Source:** IMF Fiscal Affairs Department (2021), AMECO (2021), authors' calculations.

**Note:** On average, a country that had 10 percent higher spending relative to GDP had a capital share in 2020 that was 0.25 standard deviation lower.

To understand the relationship between the political process and the distribution of income beyond the COVID-19 pandemic, we analyzed policy changes across several decades and countries. We paid particular attention to policy changes that have likely been "big," such as those following internal political transitions after coups or democratizations. Depending on the market structure, it is not always clear how policies could affect the labor share. In our mind, the labor market can be thought of as a frictional market—as opposed to a spot market, such as the stock exchange. Firms search for workers, and workers search for jobs. When they are matched, they bargain over the wage. Not all macroeconomic models allow policy to affect factor shares. For example, in the work of economists Philippe Aghion, Ufuk Akcigit, and Jesús Fernández-Villaverde, the capital share is given, and policies that are redistributive in other environments affect only the size of the pie, not its distribution. In contrast, in models with wage bargaining, many policies can be redistributive if they shift the effective bargaining power of workers relative to firms.[7]

In the first part of this article, we provide historical case studies for three countries. For each country, we examine how politics has affected the distribution of income to capital and labor since the end of World War II. In the second part of the article, we examine how changes in laws and regulations have affected the capital share of a large panel of countries since 1970. Third, we look further back to summarize related research on political and social forces that influence the capital share of income. We also provide additional details for the U.S. economy.

## Historical Case Studies

Big policy interventions often trigger income redistribution. For instance, a common event after a coup, a democratic transition, or a party system realignment is a thorough modification of labor market regulations and rapid changes in the capital income share.

Each of our three case studies illustrates significant redistribution of income that can accompany big momentous political change (Figure 2). Each panel shows the evolution of the gross capital share in one country over time, along with vertical lines that mark major political events. To show that this phenomenon affects countries with different levels of income per capita, we selected one rich economy (France), one upper-middle-income economy (Portugal), and one lower-middle-income economy (Argentina). Each of these three countries underwent large political changes during our time of study. Although we did not conduct a formal econometric assessment, all three cases show that major political shifts immediately precede major shifts in the income distribution between labor and capital. This is consistent with the notion that economic policy can materially affect the income distribution.

Our first case study is France. After the big strikes of 1968, successive French governments introduced ambitious prolabor measures.[8] The capital income share declined continuously during this period, falling from a historically high 40 percent to around 24 percent at the beginning of the 1980s. This process culminated in 1981 when François Mitterrand was elected as the first socialist president of the Fifth Republic on a left-wing platform. We see the capital share fall slightly after his election.

The worsening economic conditions forced Mitterrand to appoint Laurent Fabius as his new prime minister in July 1984, drop his alliance with the French Communist Party, and inaugurate an era of more market-friendly policies, a focus on price stability, and wage moderation. After that change, the capital share of income grew.

Our second case study is Portugal. After the Carnation Revolution on April 25, 1974, in which a military coup ended the authoritarian Estado Novo (New State) regime, the capital share fell precipitously, dropping by 20 percentage points in a matter of months. The Carnation Revolution was followed by the Processo Revolucionário em Curso (the Ongoing Revolutionary Process), which saw widespread nationalizations, aggressive land reform, and a new collective-bargaining environment that favored workers. After the failed procommunist coup of November 25, 1975, and the return to more market-friendly policies that followed the democratic normalization, the capital income share quickly recovered (without ever reaching the levels seen during the rule of the Estado Novo).

Our third case study is Argentina. The principal political events were the coups against Juan and Isabel Perón on September 16, 1955 (the Revolución Libertadora, or Liberating Revolution), and on March 24, 1976, and the beginning of the current democratic era in 1983. According to the Peronist movement's anthem, the "Marcha Peronista," Juan Perón won over the people by fighting capital.[9] In contrast, both coups brought considerably more business-friendly governments to power, and these governments instituted anti-labor-union policies. The capital share of income clearly increases thereafter. After its defeat in the Falklands War (1982), the military called for general elections that led to the presidency of Raúl Alfonsín beginning on December 10, 1983, and a subsequent drop in the capital share.

## Labor Regulation and Capital Shares

These case studies suggest that political changes are often followed by a redistribution of income between capital and labor, particularly via changes to labor regulation. But is this true more broadly? And through which channel do political events affect the capital share?

To address these questions, we turn to a panel data set that covers more than 100 countries. Although one could identify several mechanisms (such as fiscal and monetary policy, or competition policy) that link policy and income distribution, one channel in particular directly impacts income shares: changes in labor regulation. We thus use data on labor regulation, capital shares, and the timing of coups or democratic transitions for our systematic statistical analysis of politics and labor share changes.

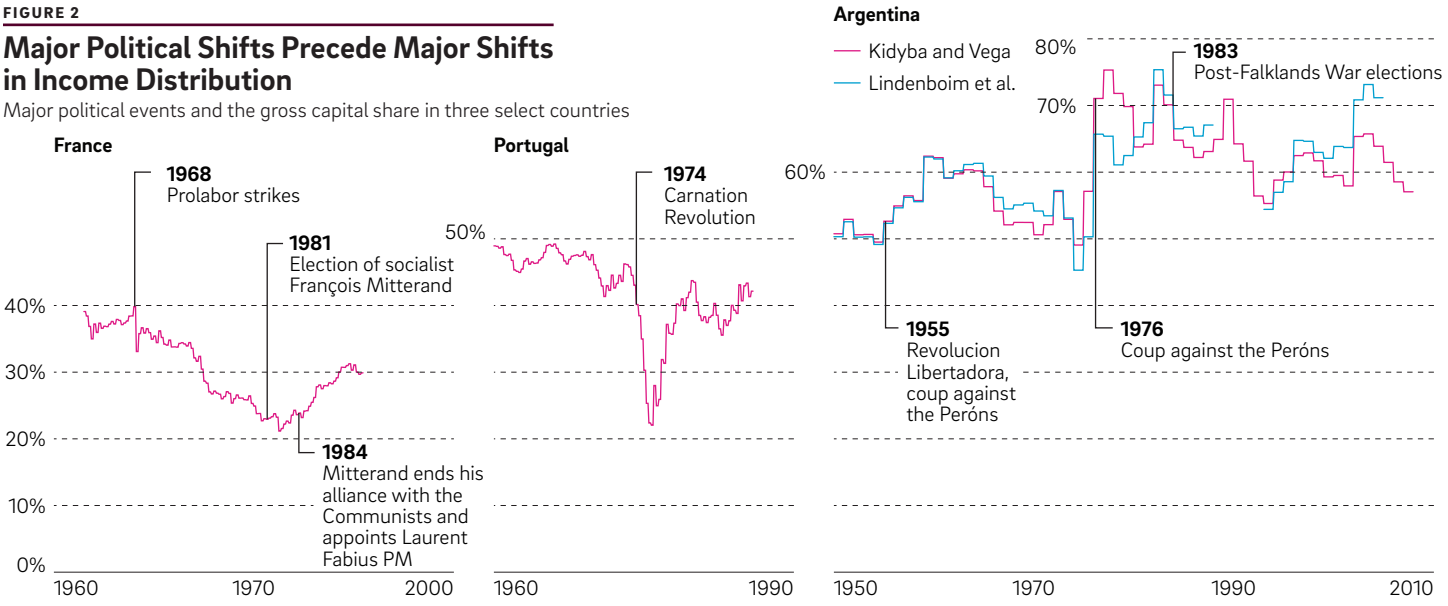
We use data from a group of legal scholars to measure labor regulation.[10] The data set contains 40 separate indicators covering five areas: the definition of employment, working time, dismissals, employee representation, and collective action. Some indicators are binary, some ordinal, and others cardinal. Each indicator measures the degree of worker protection on a scale from zero to one. We use a simple average of the different indicators to summarize the stance of labor regulation, with a higher value corresponding to higher worker protection. The measure is designed to cover both statutory and case law.[11]

To systematically capture major political events, we focus on successful coups and democratic transitions. These types of events are often dictated by exogenous shocks such as wars, internal conflicts, or the death of political leaders. Changes in labor regulation that happen around these political events are thus less likely to be triggered by economic downturns or other economic changes that could impact the labor share of income directly and thus distort our analysis.[12] We then look at transitions between

FIGURE 2

### Major Political Shifts Precede Major Shifts in Income Distribution

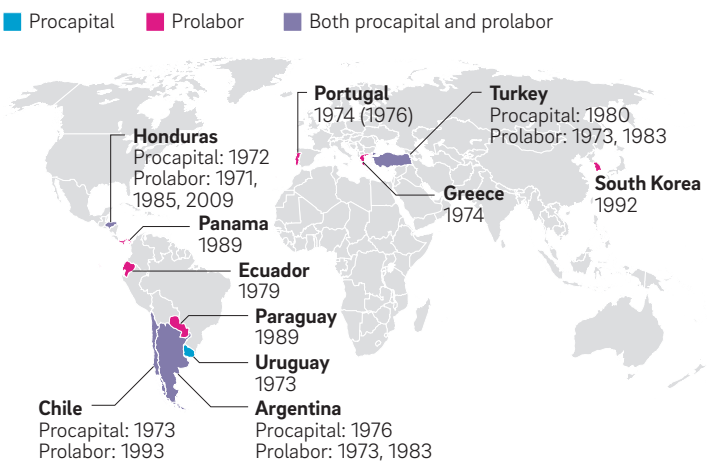
Major political events and the gross capital share in three select countries




**Source:** For Argentina, estimates are from Lindenboim et al. (2005) and Kidyba and Vega (2015). For France and Portugal, data are from the Organisation for Economic Co-operation and Development (2008).

FIGURE 3

## Political Events Used as Predictors for Labor Regulation Changes




**Source:** Authors' classification.

a coup regime and a democratic regime. Our hypothesis is that a democratic transition tends to favor labor (as most voters are wage-income earners).[13] We can thus assemble a list of political events as computed by our algorithm for the Organisation for Economic Co-operation and Development (OECD) countries, and for Latin American countries for which we have good data on income shares and labor regulations (Figure 3).

We can now combine data on labor regulation and political events with data on changes in the capital share. We focus on cumulative three-year changes following the political event,[14] and we plot changes in the labor regulation against changes in the capital share (Figure 4a). We standardize the labor share change to ease interpretation. One standard deviation is a sizable change in worker protection. Just one example, which stands out in our findings: In 1975, Argentina's worker protections declined by 4 standard deviations (according to the simple average of the different legal measures) and its gross capital share increased by 20 percentage points.

We then focus our attention on data at the time of political transitions. When we chart capital share changes and labor regulation changes after coups and democratic transitions, we see that labor regulation weakly falls in all coups. In turn, democratic transitions mostly correlate with stronger worker protection and a decline in capital shares (Figure 4b). Uruguay is a clarifying example of how we separate observations. In our analysis of labor regulation changes, we include observations for this country for 1972 and 1973. In 1972, Juan María Bordaberry became president of Uruguay and initiated an aggressively conservative policy. However, Bordaberry's accession to power was democratic and is thus excluded from our analysis of any political event. In comparison, on June 27, 1973, Bordaberry closed the parliament and inaugurated a civic-military dictatorship that repressed trade unions and jailed many of their leaders. We code 1973 as a coup.

To help interpret our data, we use regression analysis. One regression technique, ordinary least squares (OLS), finds the line that best predicts the change in the capital share for a given change in labor regulation. Rather than just eyeballing the sign of the relationship between the two, the regression analysis allows us to see whether the relationship is strong enough to be economically significant, and to assess whether it is statistically significant.[15] Even without regard to political events, we find that there is an association between the change in capital share and the change in labor regulation. Specifically, for our analysis of changes in labor regulation, we estimate that the three-year change in the capital share tends to fall by 2.18 percentage points when we observe a typical (that is, 1 standard deviation) higher three-year change in labor regulation. This estimate is statistically significantly different from zero: Its t-statistic—that is, the ratio of the estimated slope of 2.18 to the standard error of that estimate—is 4.96 in absolute terms.[16] This value is well above the thresholds of 1.65 or 1.96 typically associated with statistical significance (at the 10 percent or 5 percent level, respectively). That is, if the slope were actually zero, the chance of obtaining an estimate such as ours would be less than 5 percent.

In general, it is hard to interpret OLS estimates such as ours in terms of cause and effect. Labor regulation may be tightened in response to an increase in the capital share, weakening the causal link running in the opposite direction. Or structural change in the economy may affect both variables at the same time. The direction of the bias (if any)—that is, the departure from the true causal relationship—could go in either direction. By focusing on political events, we can isolate deliberate policy changes in labor regulation (and exclude policy responses to other factors). Indeed, if we focus only on countries with political events, the estimated slope is steeper: Around the time of a political event, a 1 standard deviation higher three-year change in labor regulation is associated with a decline in the capital share of 5.21 percentage points. This estimate is again highly statistically significant, with an absolute t-statistic of 3.16. (That is, it is unlikely that we would observe data like ours if the true effect were nil or positive.)

To move beyond pure associations and to allow us to make causal statements, we further exploit the data on coups and democratizations. We find that labor regulation tends to change differently after coups than it does after democratic transitions: For coups, worker protection is eased, while the opposite tends to be true after democratic events. If we assume that a coup or democratic transition affects the capital share only via labor regulation—as opposed to, say, tax code changes or because both the regime change and the policy change are triggered by economic inequality—we can use "two-stage least squares" regression analysis to tease out a causal relationship between labor regulation and capital share changes.

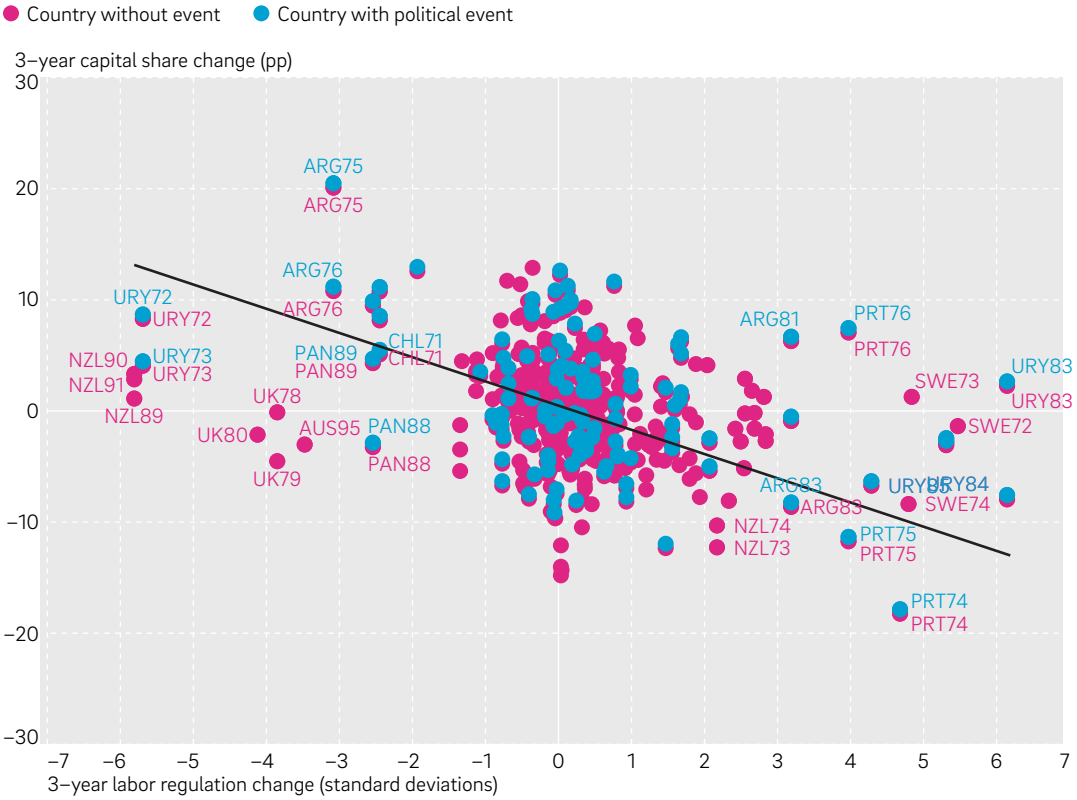
In the first stage of this regression analysis, we predict the change in worker protection with a variable indicating whether there was a coup or a democratic transition. To do so, we assign a value of +1 to democratic transitions and a value of −1 to coups. We estimate that a democratic transition tends to raise worker protection by one-third of a standard deviation. This predicted change in labor regulation then serves as an exogenous change in labor regulation in the second stage. This exogenous change is not plagued by simultaneity problems—for example, through omitted variables that might shift both the capital share and labor regulation. The estimate predicts that a tightening of labor

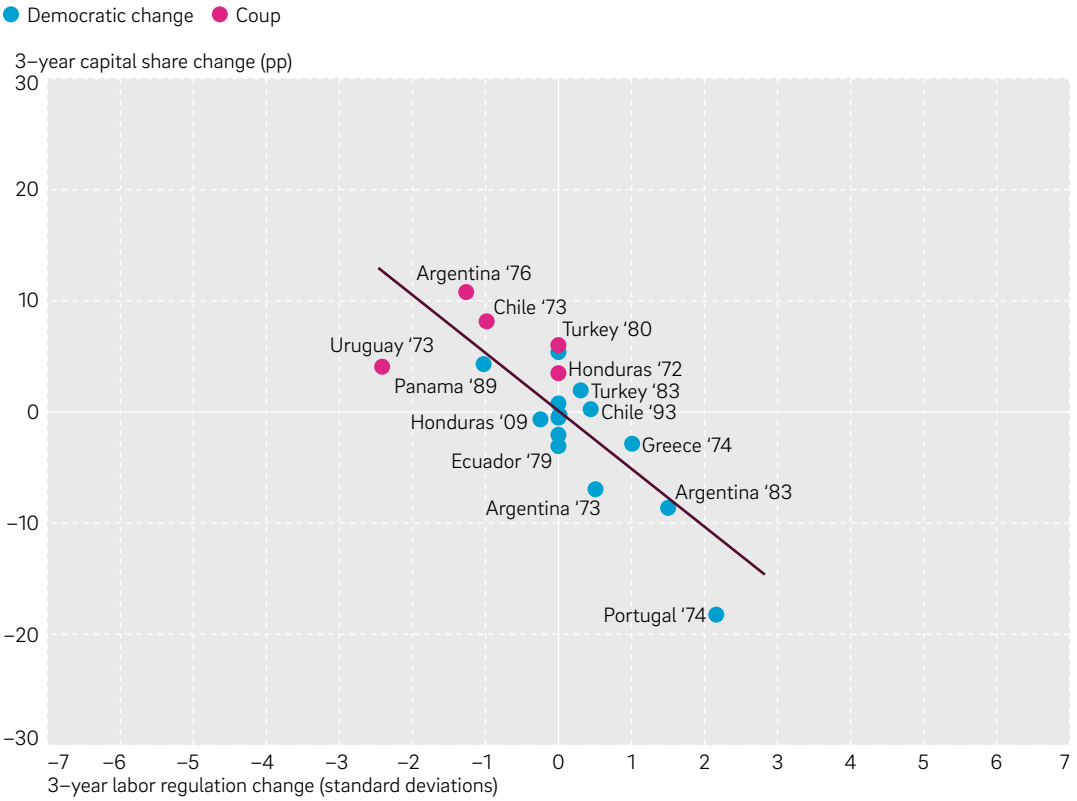
FIGURE 4

## Labor Regulation and Democratizations Correlate with a Decrease in the Capital Share

In contrast, coups correlate with a decrease in labor regulations and an increase in the capital share.

Capital share changes and labor regulation changes




**Notes:** The regression line indicates that on average, a country with a 1 standard deviation increase in labor regulation saw its capital share fall by 2.2 percentage points and by 5.2 in the aftermath of a major political event.

The top panel omits periods of no variation in regulation, conditions on a nonzero change in labor regulation, and highlights countries with political events. The bottom panel conditions on a political event in the base year. Labor regulation changes are standardized to have a mean of zero and a unit standard deviation within each sample. Overlaid is the predicted relationship based on a linear regression.

**Sources:** Adams et al. (2016); Economic Commission for Latin America and the Caribbean (ECLAC) (2015); Organisation for Economic Co-operation and Development (OECD) Business Sector Database (2008).

regulation is associated, on average, with a large 6.9 percentage point drop in the capital share—slightly stronger than the OLS prediction. Given that a regime switch induces a change of one-third of a standard deviation, a political regime switch is associated with a change in the capital share of about 2.3 percentage points.[17]

## Recent Work on Politics and Distribution

Other recent work reaches similar conclusions. For example, Lund University associate professor of economics Erik Bengtsson, IZA Institute of Labor Economics research fellow Daniel Waldenström, and University of Lausanne research fellow Enrico Rubolino analyzed political determinants of the capital share of countries. They focused on two political events—the introduction of universal suffrage and a narrow election victory for a left-wing party—in 20 countries that are complementary to the ones we analyzed.[18]

Since ownership of capital is concentrated, one may conjecture that the introduction of universal suffrage diminishes the relative political influence of capital owners. Similar to a democratic transition in our analysis, universal suffrage distributes political power more widely in the population. Their findings confirm this conjecture: The introduction of universal suffrage, they find, is associated with a drop in the net capital share of 4 percentage points. This effect diminishes over time but is still significant one decade after the policy change.

What's more, they find that the victory of a left-leaning political party also significantly lowers the capital share. Countries with left- or right-leaning governments typically also differ in terms of their economic and political conditions. A statistical analysis cannot fully control for these conditions, so the authors use a regression discontinuity design, which overcomes this challenge. According to their estimates, an election victory of a left-leaning party lowers the capital share by 1.6 percentage points.

Overall, these results are comparable to our estimates. The effect of a left-leaning election victory, according to Bengtsson, Waldenström, and Rubolino, is 30 percent smaller than our estimate of the effect of changes to labor regulation following regime change, but there is statistical uncertainty about the precise magnitude of these estimates. They also find that the effect of universal suffrage is about 70 percent larger than our estimate.

While the political events we have discussed may seem like distant possibilities for readers in advanced democracies, other social and political forces—such as the erosion of worker power—can still affect the capital share, even in countries like the U.S. that have enjoyed a stable democracy with universal suffrage for a long time. For example, Bengtsson, Waldenström, and Rubolino find that the 1984 Trade Union Act in the UK, which made it harder for unions to call strikes, raised the capital share by about 5 percentage points relative to a group of similar countries. Similarly, we found in 2021 that right-to-work legislation, which also aimed to weaken unions, was associated with higher capital shares in U.S. states.[19] In addition, MIT Sloan School of Management assistant professor of work and organization studies Anna Stansbury and Harvard Kennedy School professor Lawrence Summers, leveraging worker-level microdata as evidence of the role of worker power, find that the erosion of worker power has been associated with higher capital shares in the U.S. By combining microestimates of the union wage premium with the aggregate decline in unionization rates, they find that both forces together account for a 2.1 percentage point rise in the net capital share between 1982 and 2016. Defining worker power more broadly, they estimate that it accounts for a drop in the labor share of almost 6 percentage points over the same period, partly as a result of shifting employment shares across industries.

## Conclusion

Although we have argued that politics affects the distribution of income, it is hardly alone in doing so. Even if we interpret political forces broadly to include social attitudes, politics is likely just one of several factors. As Nobel laureate in economics Robert Solow aptly put it:

> *The decay of unions and collective bargaining, the explicit hardening of business attitudes, the popularity of right-to-work laws, and the fact that the wage lag seems to have begun at about the same time as the Reagan presidency all point in the same direction: the share of wages in national value added may have fallen because the social bargaining power of labor has diminished. This is not to say that international competition and the biased nature of new technology have no role to play, only that they are not the whole story. Internal social change and the division of rent matter too.*

What other factors do economists consider as explanations for changes in the labor share? For example, what can explain the fact that the U.S. labor share has declined in recent years?[20] As we saw above, Stansbury and Summers relate this decline to the diminished power of workers, which is broadly in line with our argument that political forces matter for distribution.

University of Oxford graduate student J. Zachary Mazlish contrasts this explanation with six others that some have argued are important. First, new capital technologies may allow firms to substitute capital for labor; self-checkout counters are one example. Second, globalization and offshoring can mimic

new technologies by allowing domestic production to use relatively more capital and cheaper labor from abroad. One example is the Mechanical Turk platform, which allows even small businesses to hire remotely located workers to perform services such as data entry. Third, firms' market power allows them to extract greater profits in product markets or pay lower wages in labor markets, possibly increasing shareholders' income. This increased market power could come about through mergers of large firms, for example, or technological breakthroughs proprietary to a firm. Fourth, transitory "supercycle" effects may have shifted income between capital and labor. For example, demand may shift to producers who are temporarily able to charge premium prices and reap much of their income as profits rather than paying it to labor. Fifth, measurement issues such as the rise of stock options or the changing number of the self-employed can cause apparent changes in labor shares, even though absent stock options, wages or salaries would be higher. And sixth, the increased ability of firms to measure worker productivity could allow them to lower workers' pay on average. Mazlish concludes that despite measurement issues, declining worker bargaining power has likely reduced the labor share of income in the U.S.

In this article we have focused on distributional questions without discussing economic output—that is, who gets a slice of the pie, not the size of the pie. As we argue in our 2021 study of the U.S., these changes in social and political factors can be connected, because shifts in workers' bargaining power also induce fluctuations in economic output. EI

## Notes

**1** See Daly (2020).

**2** While conceptually simple, the challenge lies in the details when measuring the labor share of income. This is because of the difficulty in classifying some real-world categories of income, such as a proprietor's income (is it a payment for labor or capital?), indirect taxes (does labor or capital benefit from subsidies?), intellectual property, and employee compensation via stock options. See Armenter (2015) for a discussion.

**3** Díaz-Giménez et al. (2011) show that in the U.S., the wealthiest 10 percent own about 70 percent of the wealth in the economy.

**4** See IMF Fiscal Affairs Department (2021).

**5** Credit guarantees have an unclear cost because they do not affect the budget unless the guaranteed loan defaults.

**6** We define the capital share as 1 minus the wage share, as reported in the AMECO database. For the COVID episode, we depart from the custom of measuring the capital share at factor prices. Instead, we use market prices to illustrate the effects that policy can have on distribution, because some large fiscal programs explicitly subsidized labor, which lowered the cost to business of employing labor more so than the cost of employing capital. This effect was particularly pronounced in the U.S., where the capital share at factor cost (that is, the share of earned income going to capital after subtracting subsidies and indirect taxes from the cost of production) remained about constant. Overall, at factor cost, we find a U-shaped relationship between the size of fiscal interventions and capital shares.

**7** See Drautzburg et al. (2021) for details.

**8** See Caballero and Hammour (1998) for a list of prolabor policy changes approved between 1968 and 1983.

**9** The anthem's Spanish lyrics describe Juan Perón as follows: "¡Viva Perón! ¡Viva Perón! / Por ese gran argentino / que se supo conquistar / a la gran masa del pueblo / combatiendo al capital." ("Hurrah! Hurrah for Perón! Hurrah for a great Argentinian who knew how to conquer the great mass of the people by fighting against capital.")

**10** Adams et al. (2016) compiled this annual data set, which quantifies labor regulation in 117 countries from 1970 to 2013.

**11** The data set might not adequately cover case law—that is, law based on previous judicial decisions. For instance, in the U.S., the data set records only one change from 1970 to 2013, the Worker Adjustment and Retraining Notification (WARN) Act of 1988. However, Budd (2012) characterizes the recent history of U.S. labor law as "static" statutes and "dynamic and voluminous" case law. Incomplete coverage or miscoding of case law would bias our results toward zero and, therefore, against our hypothesis.

**12** We adopt Powell and Thyne's (2011) definition of a successful coup. We adopt Bormann and Golder's (2013) definition of a democratic election as either a legislative election in a parliamentary system or a presidential election in a semiparliamentary or presidential system.

**13** Although a coup can be proworker, no such coup appears in our sample. In particular, the Carnation Revolution in Portugal did not overthrow a democratic government, and thus our algorithm does not code it as a coup. Instead, the algorithm codes the election in 1976 as the democratic transition, even if history suggests that the actual event was the army rising against the dictatorship in 1974. We use 1974 for our benchmark results.

**14** We take the capital shares from various sources, but we use only one measure per country to avoid splicing the data. Because of the varying quality of the data and possible residual correlation within countries, we cluster standard errors by country.

**15** Economic significance corresponds here to a steeper slope of the "best fit"

line produced by the OLS regression. Statistical significance is a function of how dispersed the data are around this best fit line, and of how many independent observations we have.

**16** The standard error measures the uncertainty associated with the estimated slope. Hypothetically, if we were given multiple data sets with samples like ours, we would expect the standard deviation of our slope estimates across these alternative samples to equal our estimated standard error.

**17** The t-statistic of 2.3 is below the 3.2 threshold typically needed to dispel concerns related to a weak-instrument problem (that is, that the causal estimate is spurious). Using a placebo study, however, we show that the 19 political events are not spuriously related with capital share changes. For each country, we randomly pick dates for coups and democratizations with equal probability, respecting their alternating order. We code the first event date with equal probability as either a coup or a democratization. Each subsequent event, if any, is then coded as the other type. Thus, we have the same number of event dates per country as in our actual sample, and we can apply the same instrumental variables analysis as in our benchmark case. We repeat this process 1,000 times and show the distribution of placebo and actual t-statistics. The probability of finding a second-stage t-statistic of 2.3 is below 1 percent.

**18** They also consider wars and decolonization, which they link to capital shares via the effects these events had on profitability.

**19** Drautzburg et al. (2021).

**20** As noted by Armenter (2015).

## References


Aghion, Philippe, Ufuk Akcigit, and Jesús Fernández-Villaverde. "Optimal Capital Versus Labor Taxation with Innovation-Led Growth," National Bureau of Economic Research Working Paper 19086 (2013), https://doi.org/10.3386/w19086.

Adams, Zoe, Louise Bishop, and Simon Deakin. *CBR Labour Regulation Index (Dataset of 117 Countries)*. Cambridge, England: Centre for Business Research, 2016.

Armenter, Roc. "A Bit of a Miracle No More: The Decline of the Labor Share," Federal Reserve Bank of Philadelphia *Business Review* (Third Quarter 2015), pp. 1–9.

Bengtsson, Erik , Enrico Rubolino, and Daniel Waldenström. "What Determines the Capital Share over the Long Run of History?" Center for Economic Policy and Research Discussion Paper 14693 (2020).

Bormann, Nils-Christian, and Matt Golder. "Democratic Electoral Systems Around the World, 1946–2011," *Electoral Studies*, 32:2 (2013), pp. 360–369, https://doi.org/10.1016/j.electstud.2013.01.005.

Budd, J. W. *Labor Relations: Striking a Balance*, 4th ed. New York: McGraw Hill, 2012.

Caballero, Ricardo J., and Mohamad L. Hammour. "Jobless Growth: Appropriability, Factor Substitution, and Unemployment," *Carnegie-Rochester Conference Series on Public Policy*, 48 (1998), pp. 51–94, https://doi.org/10.1016/S0167-2231(98)00016-5.

Daly, Mary C. "Is the Federal Reserve Contributing to Economic Inequality?" *FRBSF Economic Letter* 2020-32 (2020).

Díaz-Giménez, Javier, Andy Glover, and José-Víctor Ríos-Rull. "Facts on the Distributions of Earnings, Income, and Wealth in the United States: 2007 Update," Federal Reserve Bank of Minneapolis *Quarterly Review*, 34:1, February 2011, pp. 2–31.

Drautzburg, Thorsten, Jesús Fernández-Villaverde, and Pablo Guerron-Quintana. "Bargaining Shocks and Aggregate Fluctuations," *Journal of Economic Dynamics and Control*, 127:104121 (2021), pp. 1–21, https://doi.org/10.1016/j.jedc.2021.104121.

Economic Commission for Latin America and the Caribbean (ECLAC). CEPALSTAT Base de Datos (2015), http://interwp.cepal.org/sisgen/ConsultaIntegrada.asp?idIndicador=2197&idioma=e.

European Commission's Directorate General for Economic and Financial Affairs. AMECO (2021), https://ec.europa.eu/info/business-economy-euro/indicators-statistics/economic-databases/macro-economic-database-ameco/ameco-database_en.

IMF Fiscal Affairs Department. "Fiscal Monitor Database of Country Fiscal Measures in Response to the COVID-19 Pandemic" (2021), https://www.imf.org/en/Topics/imf-and-covid19/Fiscal-Policies-Database-in-Response-to-COVID-19.

Lindenboim, Javier, Juan M. Graña, and Damián Kennedy. *Distribución Funcional del Ingreso en Argentina. Ayer y Hoy*. Universidad de Buenos Aires, Facultad de Ciencias Económicas, Instituto de Investigaciones Económicas, Centro de Estudios sobre Población, Empleo y Desarrollo, CEPED, 2005.

Kidyba, Susana, and Daniel Vega. "Distribución Funcional del Ingreso en la Argentina, 1950-2007" (2015).

Mazlish, J. Zachary. "Why Is the Labor Share of Income Declining? An Informal Meta-analysis" (2021).

Organisation for Economic Co-operation and Development (OECD). Business Sector Database (2008), http://fmwww.bc.edu/ec-p/data/oecd/oecd.bsdb.html.

Powell, Jonathan M., and Clayton L. Thyne. "Global Instances of Coups from 1950 to 2010: A New Dataset," *Journal of Peace Research*, 48:2 (2011), pp. 249–259, https://doi.org/10.1177%2F0022343310397436.

Solow, Robert. "The Future of Work: Why Wages Aren't Keeping Up," *Pacific Standard* (2015).

Stansbury, Anna, and Lawrence Summers. "The Declining Worker Power Hypothesis: An Explanation for the Recent Evolution of the American Economy," *Brookings Papers on Economic Activity*, 1 (2020), pp. 1–96, http://doi.org/10.1353/eca.2020.0000.

Photo: Drs Producoes/iStock

## Regional Spotlight

# Making Ends Meet

How does the local cost of living affect a household's standard of living?

**Adam Scavette**
Regional Economist
FEDERAL RESERVE BANK
OF RICHMOND

*The views expressed in this article are not necessarily those of the Federal Reserve.*

Over the past 20 years, the San Francisco Bay Area has become as notorious for its high cost of living as for its technology companies. For the fiscal year (FY) 2020, the U.S. Department of Housing and Urban Development placed its low-income limit for a one-person family in the Bay Area at $97,600 annually[1] and $139,400 for a family of four.[2] In a September 2021 survey of San Francisco Bay Area residents,[3] 56 percent of respondents stated that they were likely to leave the region "in the next few years," with most respondents citing the general cost of living as being the top reason for wanting to leave the region. What drives the relatively high cost of living in the Bay Area? And if a tech worker's six-figure salary barely enables survival in the Golden City, then what about the region's hospitality and retail workers?

As explored in an *Economic Insights* article I cowrote in 2017 with Philadelphia

Fed Senior Economic Analyst Elif Sen,[4] the cost of living varies considerably across the nation's metro areas. These differences are driven largely by the prices of housing, food, and transportation. For many workers in many of these metro areas, local wages reflect local differences in the cost of living, but this is less likely to be true for lower-skilled workers. For example, a retail worker in Oakland, CA, is unlikely to make double the wages of their colleagues in Cleveland, even though Oakland's cost of living is more than twice as high as Cleveland's. Since our study, the COVID-19 pandemic and a surge of inflation have created new uncertainties about the cost of living in the U.S., but core considerations remain.

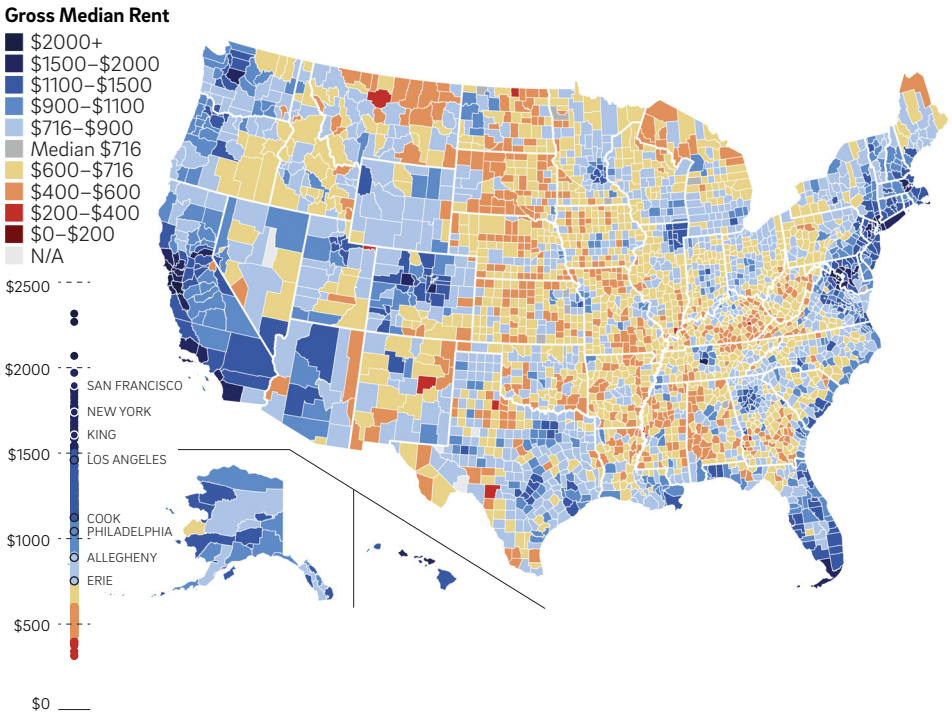
In this article, I explore the variation in the cost of living across metro areas and the implications of this variation for low-income residents. I also explore factors that deter low-income residents from migrating away from high-cost-of-living areas, and public policies that might alleviate the hardships experienced by these residents.

FIGURE 1

### Major Metro Areas Are Home to Higher Rents

Variations in rent drive much of the cost-of-living variation across regions.

Five-year average gross median rent across U.S. counties (and county-equivalents), 2019




**Source:** American Community Survey, U.S. Census.

## Housing, Food, and Transportation

Housing tends to be a household's largest single expense, so it is not surprising that it drives much of the cost-of-living variation across regions in the U.S. Counties with higher rents are concentrated in major metropolitan areas such as Chicago, New York, San Francisco, Seattle, and Los Angeles (Figure 1). In 2019, the median gross rent ranged from $313 in Pope County, IL, to $2,316 in San Mateo County, CA, with the median U.S. county renter paying $716 per month.

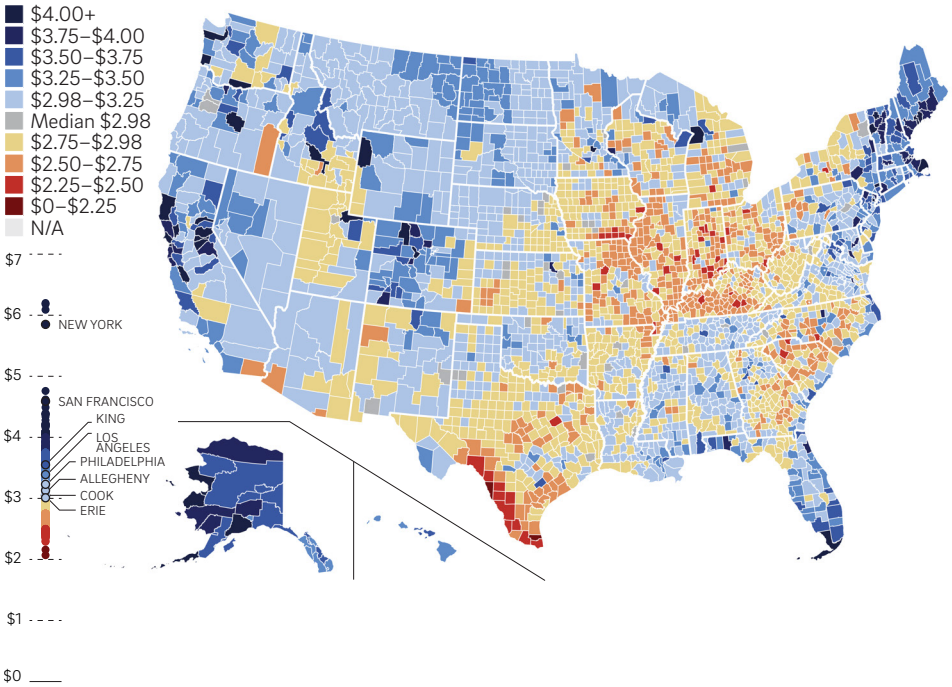
So, what drives these differences in rents across regions? The price of housing in a region is driven by supply and demand. In addition to the quality of the local housing stock, demand-side factors include the availability of jobs (along with their prevailing wages) and various amenities. These amenities include consumer goods (for example, restaurants and theaters), aesthetics (good weather, beaches, and parks), and public services (low crime and good schools).[5] People value these amenities and are willing to pay for them. For example, Harvard

FIGURE 2

### Food Prices Vary Across Regions

Prices differ due to varied wholesale costs, labor costs, and rent overhead.

Average cost per meal across U.S. counties (and county-equivalents), 2019



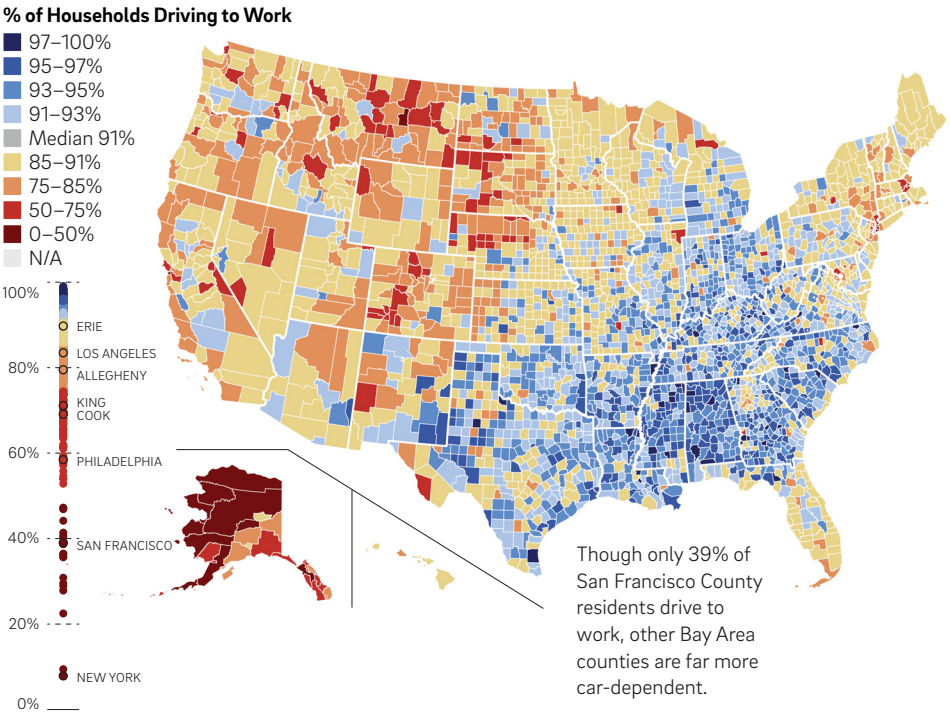

**Source:** Feeding America.

FIGURE 3

## Car Ownership Drives Transportation Costs

The availability of public transit lowers transportation costs in relatively few places.

Five-year estimate of the percentage of the residential population that drives to work across U.S. counties (and county-equivalents), 2019




**Source:** American Community Survey, U.S. Census.

Professor of Economics Edward Glaeser, Indeed Chief Economist Jed Kolko, and MIT Professor of Urban Economics Albert Saiz found in a 2001 study that weather is the single most important determinant of housing price growth at the county level in the U.S.[6]

Supply-side factors include the local costs of housing construction[7] and the effect of zoning restrictions.[8] These restrictions include height limits and single-family zoning, both of which restrict the construction of apartments, condominiums, and other multifamily buildings. University of Pennsylvania Professor of Real Estate Joseph Gyourko and U.S. Federal Reserve Board economist Jacob Krimmel find that the regulatory strictness of residential construction drives the high price of housing in major West Coast metros such as San Francisco, Seattle, and Los Angeles.[9] In other words, the costliest areas to reside in are the ones that are most desirable to consumers but, due to construction costs, zoning regulations, or physical restrictions, too expensive or difficult to build in.

The price of food also varies across regions of the U.S. When the nonprofit Feeding America calculated the average dollar amount necessary to supply an adequate and nutritious 21-meal diet per week for one adult based on local food prices, it found that, in 2019, the average cost per meal ranged from $2.07 in Willacy County, TX, to $6.20 in Crook County, OR, with residents of the median U.S. county spending $2.98 per meal (Figure 2).

Retail food prices are driven by wholesale costs, labor costs, and rent overhead as well as the price markup of local retailers.[10] Wholesale costs are highest in remote areas such as Alaska and Hawaii, where food must travel many miles to reach communities. Labor costs and rent overhead are determined by prevailing wages for retail jobs and local commercial rents, respectively. The interaction of these factors explains why the cost of food is relatively low in agriculturally active areas of Texas, Indiana, and Iowa, but relatively high in major metro areas (such as San Francisco and New York City) and remote counties of Alaska, Maine, and Vermont.

Transportation is the third major household expense that varies across U.S. regions. Although there is regional variation in the availability of public transit and in the retail prices of gasoline, automotive insurance, and automobiles, the largest driver of transportation costs is car ownership itself. In 2019, the percentage of residents that drove to work ranged from 8 percent of New York County, NY, to 99 percent of Treutlen County, GA, with 91 percent of the residents of the median U.S. county driving to work (Figure 3).

Access to reliable and comprehensive public transportation can make automobile ownership unnecessary. While the cost of a monthly pass for transportation access in a major metro area rarely exceeds $100,[11] the average monthly cost of owning an automobile is estimated at $713 nationally.[12]

## A Minimum Household Budget

The variation in cost-of-living factors across regions in the U.S. has particular significance for low-income workers. These workers often have limited savings and sometimes struggle to pay for household necessities.

The federal poverty level is an income threshold generated by the U.S. Department of Health and Human Services that determines whether an individual or family qualifies for various government assistance programs. However, this measure is often inadequate for capturing regional differences in the cost of living and for the various necessities of modern living (such as child care, a cellular phone, and broadband internet).

By adjusting for the local prices of cost-of-living factors, the United Way calculates what it calls the household survival budget–the monthly income necessary for a household to purchase its basic necessities.[13] People earning above the federal poverty level but below their area's respective household survival budget are identified as ALICE: asset-limited, income-constrained, and employed.

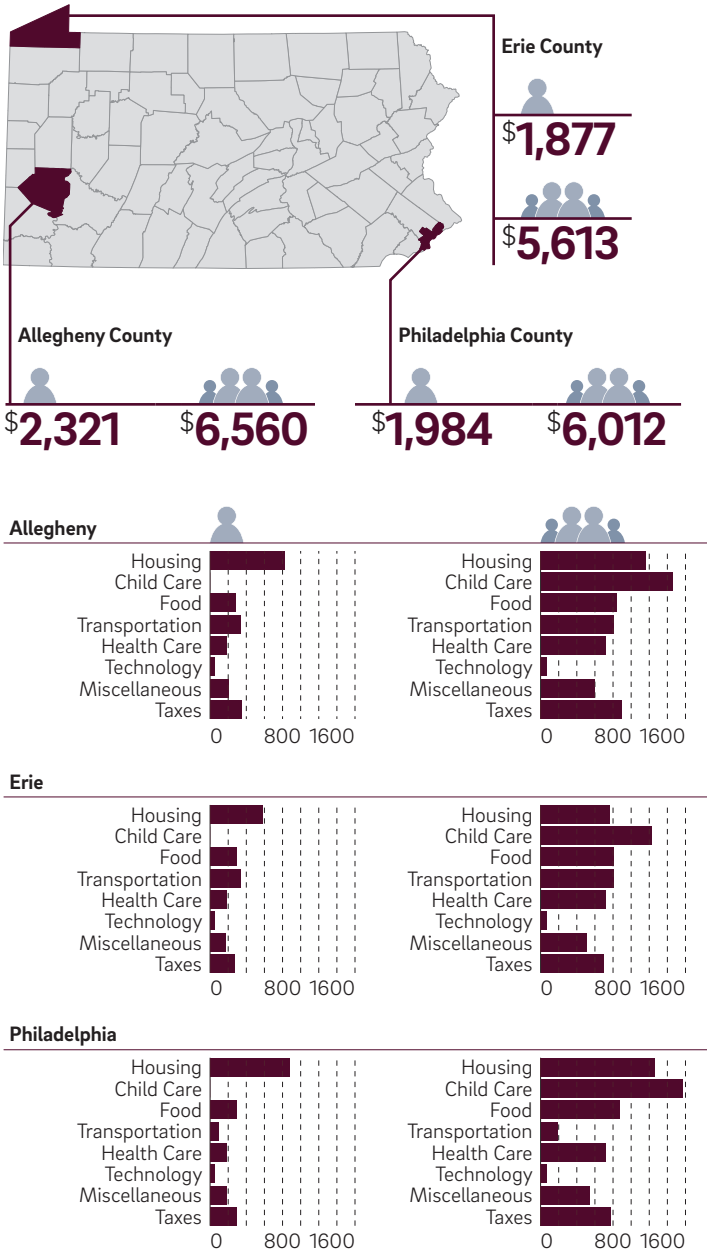
The United Way's household survival budget offers a comprehensive cost breakdown of necessities for a modern household based on family size and local prices. How does this budget vary across the counties that contain three

FIGURE 4

## Public Transit Helps Make Philadelphia More Affordable

Whereas cheaper housing and child care benefit families in other counties.

Monthly household survival budgets for three Pennsylvania counties (Philadelphia, Allegheny, and Erie), 2020.




**Source:** United For ALICE—ALICE Household Survival Budgets, Pennsylvania, 2018.

**Note:** This figure plots the breakdown of factors necessary for both a one-adult household and a four-person family consisting of two adults and two children in child care.

of Pennsylvania's largest cities: Philadelphia, Allegheny (Pittsburgh), and Erie?

For Philadelphia County, the monthly household survival budget is $1,984 for a one-person family and $6,012 for a four-person family. In Allegheny County, the annual household survival budget is $2,321 (17 percent higher than Philadelphia) and $6,560 (9 percent higher than Philadelphia), respectively. In Erie County, the annual household survival budget is $1,877 (5 percent lower than Philadelphia) and $5,613 (7 percent lower than Philadelphia), respectively (Figure 4).[14]

These cost breakdowns indicate that transportation accounts for the largest difference between Philadelphia's and Allegheny's monthly household survival budgets for a four-person family. A Philadelphia family pays $187 for transportation, whereas an Allegheny family pays $808 (332 percent higher than Philadelphia). Philadelphia's more extensive public transportation network likely explains the transportation cost difference between the two counties. The same difference in the cost of transportation applies when comparing Philadelphia to Erie. However, housing and child care are respectively 40 percent and 21 percent lower in Erie compared to Philadelphia, and these two expenses drive the overall affordability of the former.

## The Impact of Cost-of-Living Variation

Stanford Professor of Economics Rebecca Diamond and University of California, Berkeley, Professor of Economics Enrico Moretti explore the relationship between the local cost of living and the standard of living, which they define as the amount of market-based consumption that residents can afford.[15] They find that when families can stretch their dollar further in a lower-cost-of-living area, they are able to spend beyond necessities such as rent, food, and transportation, and they thus enjoy a higher standard of living. By exploring the spending behavior of households across different income groups,[16] the authors find that households face vastly different standards of living based on their location within the U.S.[17]

Diamond and Moretti analyzed the relationship between the local price index and market consumption for both high-income households and low-income households (Figures 5a and 5b). They found that a high-income household that moves from San Francisco, which is a high-cost-of-living area, to Cleveland, a medium-cost-of-living area, would see its consumption increase by 33 percent. However, a low-income household making that same move would see its consumption increase by 41 percent. Furthermore, a low-income household that moves from San Francisco to Johnstown, PA, a low-cost-of-living area, would see its consumption increase by 73 percent.

Diamond and Moretti also analyzed the relationship based on level of education rather than income, since household income, more so than education, is in part a function of location. They found that college graduates who live in high-cost-of-living cities experience the same standard of living on average as college graduates living in lower-cost-of-living cities. In competition for a limited pool of talent, employers compensate highly educated individuals who take jobs located in high-cost-of-living areas. In other words, the average tech worker in Cleveland enjoys the

same standard of living as their counterpart in San Jose, CA, because compensation for high-skilled employees in expensive cities generally offsets the area's higher cost of living.[18]

However, this is not the case for less-educated workers. A high-school graduate who moves from Cleveland to San Jose would experience an 8 percent decline in their standard of living. Therefore, a retail worker in San Jose would likely be worse off than their counterpart in Cleveland since competition for lower-skilled workers does not typically result in the same wage premium. Nevertheless, because Diamond and Moretti's definition of standard of living does not capture the value of nonmarket amenities such as weather, many retail workers might be willing to forgo the higher market-based consumption to stay in California and avoid Cleveland's winters.

## Why Don't Low-Income Households Move?

If low-income households experience a lower standard of living in expensive areas, then why don't they move to more affordable areas? In fact, many of them do, for precisely that reason. As University of Chicago Professor of Public Policy Peter Ganong and Harvard Kennedy School Associate Professor of Public Policy Daniel Shoag noted in 2017, the disproportionate increase in housing prices in high-income cities over the past 30 years has led to "skill sorting," where high-skilled workers move to high-income cities and low-skilled workers leave.[19]

However, there are several reasons why many low-income households do not leave expensive cities. For one, moving from one region to another is expensive and disruptive, particularly for resource-constrained families. Additionally, many people value their existing hometown for its social ties or the amenities it offers. Philadelphia Fed Senior Economist Kyle Mangum suggests that, on average, most Americans demonstrate a strong attachment to home because of the utility of these social ties.[20] The presence of an existing family and social support network often results in monetary benefits for low-income families, such as informal child care and emergency financial support. Lastly, the presence of robust transportation systems[21] and greater access to social services[22] in expensive urban areas such as San Francisco, New York, and Chicago might explain why many low-income households decide to stay put.

## Implications for Public Policy

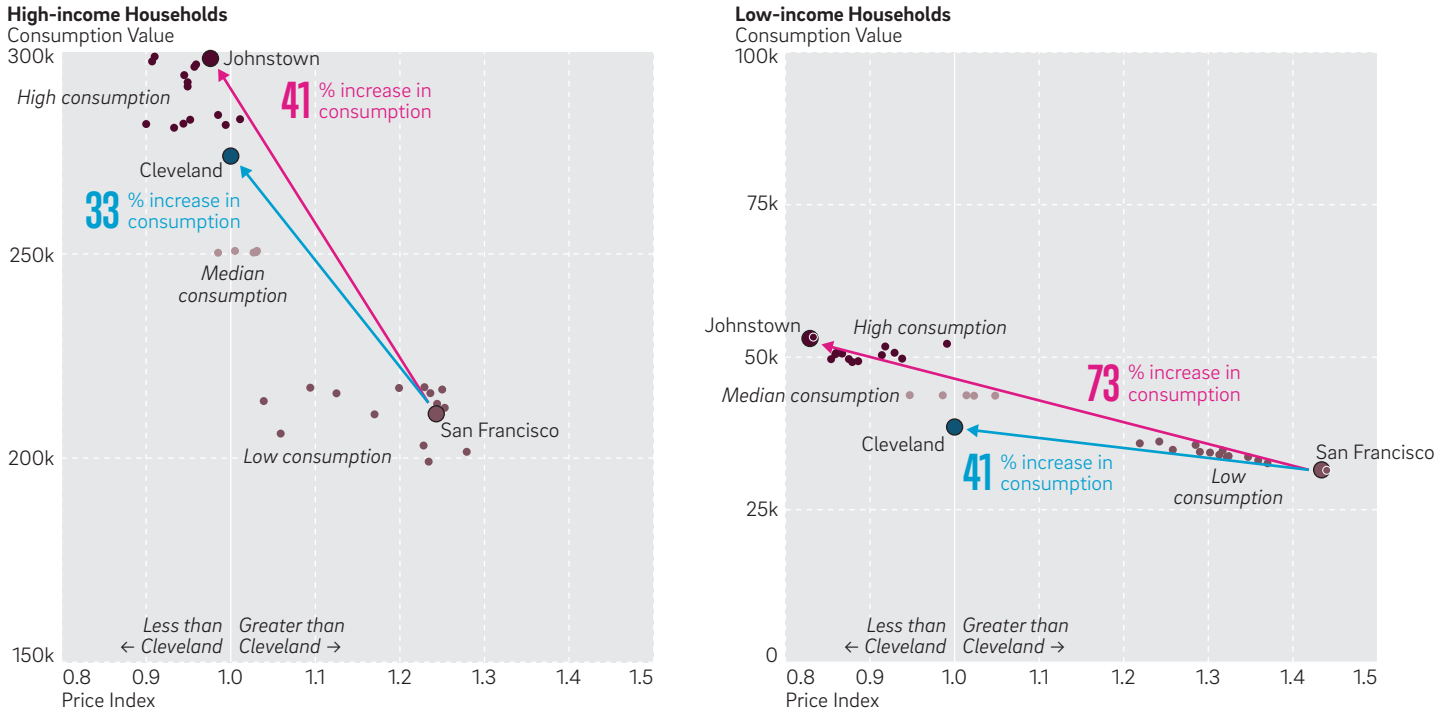
Because the cost of housing imposes the largest hurdle to the financial survival of low-income families in expensive areas,[23] a simple solution would be zoning to encourage the building of denser multifamily housing.[24] However, such reforms are often

FIGURE 5

### Households Face Different Standards of Living in Different Regions

Low-income households benefit more from a move to a lower-cost-of-living region.

The X axis represents the cost of living for a particular urban area, assuming that the household buys the same bundle of goods in each area; the Y axis represents consumption, or how much that household would spend if they moved to the median-cost region; the boxes represent the 15 urban areas with the highest levels of consumption, the five in the middle of the distribution, and the 15 with the lowest levels of consumption, repeated for high-income and low-income households




**Source:** Table 2 of Diamond and Moretti (2021).

**Notes:** The price indexes (high-income and low-income) for Cleveland, OH, the median-cost region, are by construction equal to 1. The indexes from other regions are to be interpreted as relative to Cleveland. Consumption is measured by how much a household would need to spend in Cleveland to live the same quality of life they are living in their home region.

more easily said than done. Existing residents often have an active political interest in retaining single-family zoning and discouraging denser development. (This phenomenon is sometimes referred to as NIMBY-ism for "not in my backyard.")

In a 2012 book, Moretti suggested that relocation subsidies for low-skilled unemployed workers would allow them to move to cities with better job opportunities, thus reducing unemployment.[25] This policy could help families move and, in doing so, survive economic hardship. Furthermore, this type of relocation policy might be augmented to include underemployed or low-income workers who desire to relocate to lower-cost-of-living areas.

## Final Thoughts

Throughout much of the 20th century, expensive cities offered the American Dream to many low-skilled workers and their families. Ganong and Shoag explain that in 1960, both lawyers and janitors could see a material improvement in their standard of living by moving from a state in the Deep South[26] to the tristate New York area,[27] but 50 years later a janitor would be better off staying in the Deep South due to the high cost of housing in New York.

Policymakers should consider how these differences in the cost of living affect the welfare of households across the income and skill spectrums. While efforts at the local level to improve the affordability of housing might offer the most relief, national policy also has a role. For example, monitoring whether inflation has a disproportionate impact on low-income households might better inform how monetary policy should be conducted.[28]

## Notes

**1** See U.S. Department of Housing and Urban Development (2021).

**2** For reference, the respective FY 2020 low-income limits for the Philadelphia MSA were $54,150 for a one-person family and $77,300 for a four-person family.

**3** See Joint Venture Silicon Valley (2021).

**4** See Sen and Scavette (2017).

**5** See Bartik and Smith (1987).

**6** See Glaeser, Kolko, and Saiz (2001).

**7** See Gyourko and Saiz (2004).

**8** See Glaeser and Gyourko (2002).

**9** See Gyourko and Krimmel (2021).

**10** See Handbury and Weinstein (2015).

**11** See Ross (2021).

**12** See AAA Automotive (2020).

**13** See United for ALICE Research Center (2020).

**14** The statistics for the monthly household survival budget estimates are highly conservative and do not control for various factors such as neighborhood quality or housing quality. The United Way suggests that the budget is neither sustainable over time nor meant to be a recommended budget.

**15** See Diamond and Moretti (2021). Their definition of standard of living as market-based consumption does not include differences in nonmarket amenities such as weather.

**16** The authors classify households into three income groups (based on unadjusted income): low, $10,000–$50,000; middle, $50,000–$200,000; and high, greater than $200,000.

**17** Diamond and Moretti use commuting zones as their geographic unit of analysis.

**18** Furthermore, high-income households may experience higher utility per dollar spent in expensive cities, because the latter offer more products and services that cater to high-earning

households—think high-end clothing, gourmet foods, and salon-spa experiences. See Handbury (2021).

**19** See Ganong and Shoag (2017).

**20** See Mangum (2020).

**21** See Glaeser, Kahn, and Rappaport (2008).

**22** See Allard (2004).

**23** See Menendian et al. (2020).

**24** See Schuetz (2009).

**25** See Moretti (2012).

**26** Alabama, Arkansas, Georgia, Mississippi, and South Carolina

**27** New York, New Jersey, and Connecticut

**28** See Goolsbee (2021).

## References


AAA Automotive. "What Does It Cost to Own and Operate a Car?" Accessed June 19, 2022, from https://www.aaa.com/autorepair/articles/what-does-it-cost-to-own-and-operate-a-car.

Allard, Scott. "Access to Social Services: The Changing Urban Geography of Poverty and Service Provision," Brookings Institution, 2004.

Bartik, Timothy, and V. Kerry Smith. "Urban Amenities and Public Policy," in Edwin S. Mills, ed., *Handbook of Regional and Urban Economics*, Volume 2. North-Holland, The Netherlands: Elsevier B.V., 1987, pp. 1207-1254, https://doi.org/10.1016/S1574-0080(87)80017-2.

Diamond, Rebecca, and Enrico Moretti. "Where Is Standard of Living the Highest? Local Prices and the Geography of Consumption," National Bureau of Economic Research Working Paper 29533 (2021), https://doi.org/10.3386/w29533.

Ganong, Peter, and Daniel Shoag. "Why Has Regional Income Convergence in the U.S. Declined?" *Journal of Urban Economics*, 102 (2017), pp. 76–90, https://doi.org/10.1016/j.jue.2017.07.002.

Glaeser, Edward, and Joseph Gyourko. "The Impact of Zoning on Housing Affordability," National Bureau of Economic Research Working Paper 8835 (2002), https://doi.org/10.3386/w8835.

Glaeser, Edward, Matthew Kahn, and Jordan Rappaport. "Why Do the Poor Live in Cities? The Role of Public Transportation," *Journal of Urban Economics*, 63:1 (2008), pp. 1–24, https://doi.org/10.1016/j.jue.2006.12.004.

Glaeser, Edward, Jed Kolko, and Albert Saiz. "Consumer City," *Journal of Economic Geography*, 1:1 (2001), pp. 27–50, https://doi.org/10.1093/jeg/1.1.27.

Goolsbee, Austan. "The Missing Data in the Inflation Debate," *New York Times*, December 30, 2021.

Gyourko, Joseph, and Albert Saiz. "Is There a Supply Side to Urban Revival?" Wharton School Working Paper 453 (2004).

Gyourko, Joseph, and Jacob Krimmel. "The Impact of Local Residential Land Use Restrictions on Land Values Across and Within Single Family Housing Markets," National Bureau of Economic Research Working Paper 28993 (2021), https://doi.org/10.3386/w28993.

Handbury, Jessie, and David E. Weinstein. "Goods Prices and Availability in Cities," *Review of Economic Studies*, 82:1 (2015), pp. 258–296, http://dx.doi.org/10.1093/restud/rdu033.

Handbury, Jessie. "Are Poor Cities Cheap for Everyone? Non-Homotheticity and the Cost of Living Across U.S. Cities," *Econometrica*, 89:6 (2021), pp. 2679–2715, https://doi.org/10.3982/ECTA11738.

Joint Venture Silicon Valley. "2021 Silicon Valley Poll" (2021).

Mangum, Kyle. "No More Californias," Federal Reserve Bank of Philadelphia *Economic Insights* (First Quarter 2020), pp. 8–13, https://www.philadelphiafed.org/the-economy/regional-economics/no-more-californias.

Menendian, Stephen, Samir Gambhir, Karina French, and Arthur Gailes. "Single-Family Zoning in the San Francisco Bay Area," Othering & Belonging Institute, University of California, Berkeley (2020).

Moretti, Enrico. *The New Geography of Jobs*. Boston: Houghton Mifflin Harcourt, 2012.

Ross, Katherine. "The Most and Least Affordable Cities for Public Transit," ValuePenguin by Lending Tree (2021).

Sen, Elif, and Adam Scavette. "Regional Spotlight: Purchasing Power Across the U.S.," Federal Reserve Bank of Philadelphia *Economic Insights* (Fourth Quarter 2017), pp. 1–6, https://www.philadelphiafed.org/the-economy/regional-economics/regional-spotlight-purchasing-power-across-the-us.

Schuetz, Jenny. "No Renters in My Suburban Backyard: Land Use Regulation and Rental Housing," *Journal of Policy Analysis and Management*, 28:2 (2009), pp. 296–320, https://doi.org/10.1002/pam.20428.

U.S. Department of Housing and Urban Development. "FY 2022 Income Limits Summary" (2021), https://www.huduser.gov/portal/datasets/il/il2020/2020summary.odn.

United For ALICE. (2020). *ALICE Household Survival Budgets, Pennsylvania,* 2018. Retrieved from https://www.unitedforalice.org/household-budgets/pennsylvania.

# Research Update

These papers by Philadelphia Fed economists, analysts, and visiting scholars represent preliminary research that is being circulated for discussion purposes.

The views expressed in these papers are solely those of the authors and should not be interpreted as reflecting the views of the Federal Reserve Bank of Philadelphia or Federal Reserve System.

## The Role of Regulation and Bank Competition in Small Firm Financing: Evidence from the Community Reinvestment Act

This paper analyzes how bank regulation that promotes greater access to credit impacts the financing of targeted small firms. It develops a model where banks compete with trade creditors to fund small firms and applies it to study the effects of the Community Reinvestment Act (CRA). The empirical tests reveal that a CRA-induced increase in bank loans reduces small firms' use of relatively expensive trade credit. The effect is more profound in low- and medium-income areas where financial constraints are tighter due to low bank competition. The effect is also larger for small firms that operate in trade-credit-dependent industries.

**WP 22-06**. Panagiotis Avramidis, The American College of Greece; George Pennacchi, University of Illinois at Urbana-Champaign; Konstantinos Serfes, Drexel University and Federal Reserve Bank of Philadelphia Consumer Finance Institute Visiting Scholar; Kejia Wu, Federal Reserve Bank of Philadelphia Supervision, Regulation, and Credit Department and Drexel University.

## Place-Based Consequences of Person-Based Transfers: Evidence from Recessions

This paper studies how government transfers respond to changes in local economic activity that emerge during recessions. Local labor markets that experience greater employment losses during recessions face persistent relative decreases in per capita earnings. However, these areas also experience persistent increases in per capita transfers, which offset 16 percent of the earnings loss on average. The increase in transfers is driven by unemployment insurance in the short run, and medical, retirement, and disability transfers in the long run. Our results show that nominally place-neutral transfer programs redistribute considerable sums of money to places with depressed economic conditions.

**WP 22-08**. Brad Hershbein, W.E. Upjohn Institute for Employment Research; Bryan A. Stuart, Federal Reserve Bank of Philadelphia Research Department.

## The Firm Size-Leverage Relationship and Its Implications for Entry and Business Concentration

Larger firms (by sales or employment) have higher leverage. This pattern is explained using a model in which firms produce multiple varieties, acquire new varieties from their inventors, and borrow against the future cash flow of the firm with the option to default. A variety can die with a constant probability, implying that firms with more varieties (bigger firms) have a lower variance of sales growth and, in equilibrium, higher leverage. In this setup, a drop in the risk-free rate increases the value of an acquisition more for bigger firms because of their higher leverage: They can (and do) borrow a larger fraction of their future cash flow. The drop causes existing firms to buy more of the new varieties arriving into the economy, resulting in a lower startup rate and greater concentration of sales.

**WP 22-07**. Satyajit Chatterjee, Federal Reserve Bank of Philadelphia Research Department; Burcu Eyigungor, Federal Reserve Bank of Philadelphia Research Department.

## Racial Inequality in Unemployment Insurance Receipt and Take-Up

This paper studies differences in receipt and take-up of unemployment insurance (UI) benefits among White and Black individuals. We combine state-level UI regulations with data containing detailed information on individuals' work history and UI receipt. Black individuals who separate from a job are 24 percent less likely to receive UI than White individuals. The UI receipt gap stems primarily from lower take-up of UI benefits among likely eligible individuals, as opposed to differences in benefit eligibility. Statistical decompositions indicate that about one-half of the take-up gap is explained by Black workers' lower preunemployment earnings and higher tendency to live in the South.

**WP 22-09**. Elira Kuka, George Washington University and NBER; Bryan A. Stuart, Federal Reserve Bank of Philadelphia Research Department.

## Macroeconomic Forecasting and Variable Ordering in Multivariate Stochastic Volatility Models

We document five novel empirical findings on the well-known potential ordering drawback associated with the time-varying parameter vector autoregression with stochastic volatility developed by Cogley and Sargent (2005) and Primiceri (2005), CSP-SV. First, the ordering does not affect point prediction. Second, the standard deviation of the predictive densities implied by different orderings can differ substantially. Third, the average length of the prediction intervals is also sensitive to the ordering. Fourth, the best ordering for one variable in terms of log-predictive scores does not necessarily imply the best ordering for another variable under the same metric. Fifth, the ordering problem becomes exacerbated in conditional forecasting exercises. Then, we consider three alternative ordering invariant time-varying parameter VAR-SV models: the discounted Wishart SV model (DW-SV) and two dynamic stochastic correlation SV (DSC-SV) models. The DW-SV underperforms relative to each ordering of the CSP-SV. The DSC-SV models have an out-of-sample forecasting performance comparable with the median outcomes across orderings of the CSP-SV.

**WP 21-21 Revised**. Jonas E. Arias, Federal Reserve Bank of Philadelphia Research Department; Juan F. Rubio-Ramírez, Emory University and Federal Reserve Bank of Philadelphia Research Department Visiting Scholar; Minchul Shin, Federal Reserve Bank of Philadelphia Research Department.

## More Than Shelter: The Effects of Rental Eviction Moratoria on Household Well-Being

We investigate the impact of 2020 COVID-19 rental eviction moratoria on household well-being. Analysis of new panel data indicates that eviction moratoria reduced eviction filings and resulted in redirection of scarce household financial resources to immediate consumption needs, notably including food and grocery spending. We also find that eviction moratoria reduced household food insecurity and mental stress, with larger effects evidenced among African American households. Findings suggest broad salutary effects of eviction moratoria during a period of widespread virus and economic distress.

**WP 22-10**. Xudong An, Federal Reserve Bank of Philadelphia Supervision, Regulation, and Credit Department; Stuart A. Gabriel, UCLA Anderson School of Management; Nitzan Tzur-Ilan, Federal Reserve Bank of Dallas.

## A Twenty-First Century of Solitude? Time Alone and Together in the United States

This paper explores trends in time alone and with others in the U.S. Since 2003, Americans have increasingly spent their free time alone, on leisure at home, and have decreasingly spent their free time with individuals from other households. These trends are more pronounced for non-White individuals, for males, for the less educated, and for individuals from lower-income households. Survey respondents spending a large fraction of their free time alone report lower subjective well-being. As a result, differential trends in time alone suggest that between-group inequality may be increasing more quickly than previous research has reported.

**WP 22-11**. Enghin Atalay, Federal Reserve Bank of Philadelphia Research Department.

## Fintech, Cryptocurrencies, and CBDC: Financial Structural Transformation in China

Fintech and decentralized finance have penetrated all areas of the financial system and have improved financial inclusion in the last decade. In this paper, we review the recent literature on fintech, cryptocurrencies, stablecoins, and central bank digital currencies (CBDCs). There are important implications from the rise of fintech and the introduction of stablecoins and CBDCs in recent years. We provide an overview of China's experience in fintech, focusing on payments, digital banking, fintech lending, and the recent progress on its CBDC pilots (e-CNY). We also discuss important considerations in designing effective cryptocurrency regulations. Cryptocurrency regulations could promote growth of innovations through enhanced public confidence in this market. The e-CNY could become mainstream in the global market through effective regulations, which provide incentives and protection to market participants. A key factor to success for digital currencies has been their widespread adoption. If the Chinese e-CNY were to become a mainstream currency, the introduction of CBDCs could potentially offer solutions to existing problems inherent in traditional financial systems.

**WP 22-12**. Franklin Allen, Imperial College London; Xian Gu, Durham University; Julapa Jagtiani, Federal Reserve Bank of Philadelphia Supervision, Regulation, and Credit Department.

## The Problem Has Existed over Endless Years: Racialized Difference in Commuting, 1980–2019

How have the longer journeys to work faced by Black commuters evolved in the U.S. over the last four decades? Black commuters spent 50.3 more minutes commuting per week in 1980 than White commuters; this difference declined to 22.4 minutes per week in 2019. Two factors account for the majority of the difference: Black workers are more likely to commute by transit, and Black workers make up a larger share of the population in cities with long average commutes. Increases in car commuting by Black workers account for nearly one-quarter of the decline in the racialized difference in commute times between 1980 and 2019. Today, commute times have mostly converged (conditional on observables) for car commuters in small- and midsized cities. In contrast, persistent differences in commute times today arise in large, segregated, congested, and—especially—expensive cities, revealing the limits of cars in overcoming entrenched racialization of other factors of commuting.

**WP 22-13**. devin michelle bunten, Massachusetts Institute of Technology, and Visiting Scholar, Federal Reserve Bank of Philadelphia Research Department; Ellen Fu, University of Pennsylvania; Lyndsey Rolheiser, University of Connecticut; Christopher Severen, Federal Reserve Bank of Philadelphia Research Department.

## The Impact of Fintech Lending on Credit Access for U.S. Small Businesses

Small business lending (SBL) plays an important role in funding productive investment and fostering local economic growth. Recently, nonbank lenders have gained market share in the SBL market in the U.S., especially relative to community banks. Among nonbanks, fintech lenders have become particularly active, leveraging alternative data for their own internal credit scoring. We use proprietary loan-level data from two fintech SBL platforms (Funding Circle and LendingClub) to explore the characteristics of loans originated prepandemic (2016–2019). Our results show that fintech SBL platforms lent more in zip codes with higher business bankruptcy filings and higher unemployment rates. Moreover, fintech platforms' internal credit scores were able to predict future loan performance more accurately than the traditional approach to credit scoring. Using Y-14M loan-level bank data, we also compare fintech SBL with traditional bank business cards in terms of credit access and interest rates. Overall, fintech lenders have a potential to create a more inclusive financial system, allowing small businesses that were less likely to receive credit through traditional lenders to access credit and to do so at lower cost.

**WP 22-14**. Giulio Cornelli, Bank for International Settlements; Jon Frost, Bank for International Settlements; Leonardo Gambacorta, Bank for International Settlements; Julapa Jagtiani, Federal Reserve Bank of Philadelphia Supervision, Regulation, and Credit Department.

## Blockchain Economics

The fundamental problem in digital record-keeping is establishing consensus on an update to a ledger, e.g., a payment. Consensus must be achieved in the presence of faults — situations in which some computers are offline or fail to function appropriately. Traditional centralized record-keeping systems rely on trust in a single entity to achieve consensus. Blockchains decentralize record-keeping, dispensing with the need for trust in a single entity, but some instead build a consensus based on the wasteful expenditure of computational resources (proof-of-work). An ideal method of consensus would be tolerant to faults, avoid the waste of computational resources, and be capable of implementing all individually rational transfers of value among agents. We prove a Blockchain Trilemma: Any method of consensus, be it centralized or decentralized, must give up (i) fault-tolerance, (ii) resource-efficiency, or (iii) full transferability.

**WP 22-15**. Joseph Abadi, Federal Reserve Bank of Philadelphia Research Department; Markus Brunnermeier, Princeton University.

## The Evolution of Local Labor Markets After Recessions

This paper studies how U.S. local labor markets respond to employment losses after recessions. Following each recession between 1973 and 2009, we find that areas that lose more jobs during the recession experience persistent relative declines in employment and population. Most importantly and contrary to prior work, these local labor markets also experience persistent decreases in the employment-population ratio and per capita earnings. Our results imply that limited population responses result in longer-lasting consequences for local labor markets than previously thought, and that recessions are followed by persistent reallocation of employment across space.

**WP 22-16**. Brad Hershbein, W.E. Upjohn Institute for Employment Research; Bryan A. Stuart, Federal Reserve Bank of Philadelphia Research Department.

## Data in Focus

# Survey of Professional Forecasters and Real GDP Growth

The Philadelphia Fed collects, analyzes, and shares useful data about the Third District and beyond. Here's one example.

The Philadelphia Fed conducts several surveys that help us either understand current or anticipate future economic conditions, but one survey stands out for its breadth, depth, and age: the Survey of Professional Forecasters (SPF), the oldest quarterly survey of macroeconomic forecasts in the U.S.

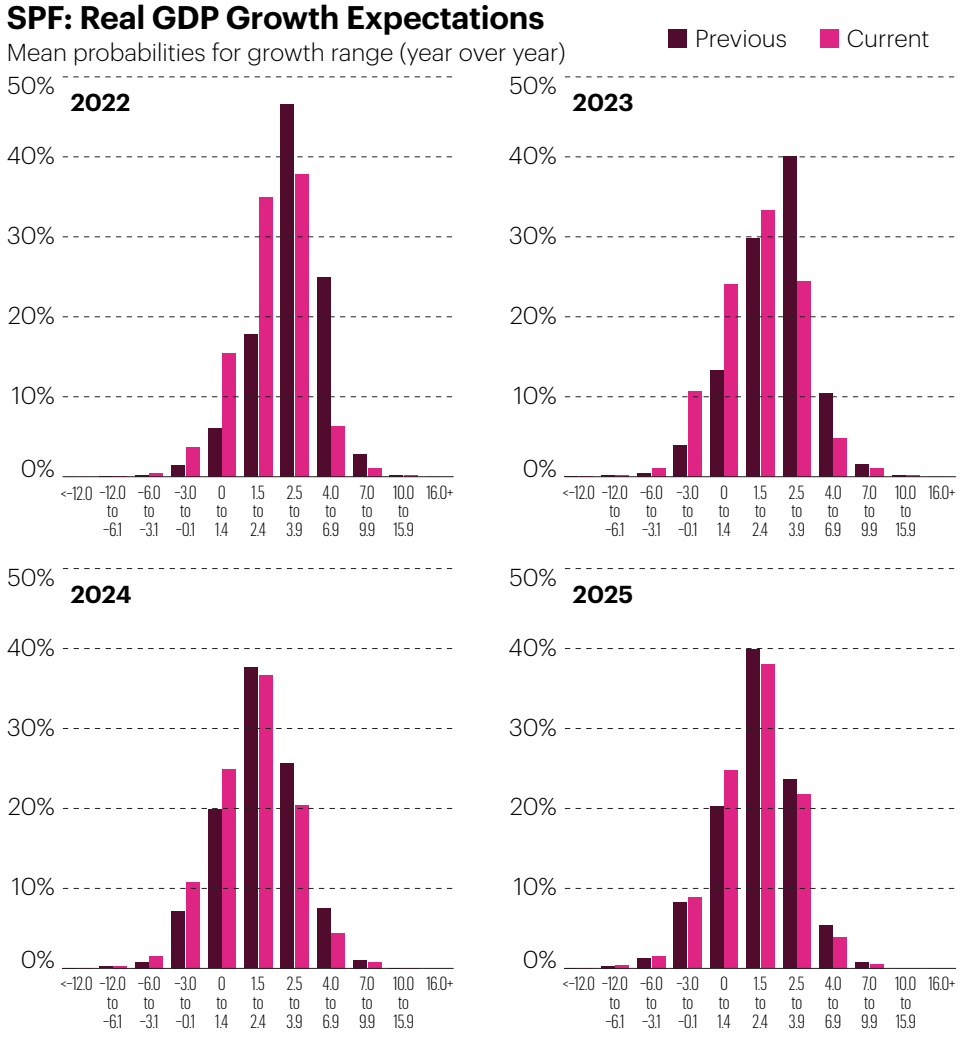
The American Statistical Association (ASA) and the National Bureau of Economic Research (NBER) launched this survey in 1968. Members of the Business and Economic Statistics Section of the ASA participated in the survey, while the NBER administered the survey. When the NBER decided to discontinue the survey in 1990, the Philadelphia Fed adopted this orphan, renaming it the Survey of Professional Forecasters and adding several forecasts for key variables.

One such variable is real GDP growth. This Data in Focus features the mean probabilities for real GDP growth for each of the next four years. For example, in the previous survey, respondents predicted, on average, a 40 percent probability that GDP would grow between 2.5 and 3.9 percent in 2023, but in the current survey that percentage drops to less than 25 percent. Meanwhile, the predicted probability of growth between 1.5 and 2.4 percent in 2023 increased from less than 30 to almost 35 percent. This reflects sinking expectations for GDP growth in 2023.

As the U.S. economy navigates these very uncertain times, economists will likely use this variable—and the SPF's other variables—as the gold standard for their own forecasts and models.

### SPF: Real GDP Growth Expectations

Mean probabilities for growth range (year over year)




**Source:** Real-Time Data Research Center, Federal Reserve Bank of Philadelphia.

## Learn More

**Online:** https://www.philadelphiafed.org/surveys-and-data/real-time-data-research/survey-of-professional-forecasters

**E-mail:** PHIL.SPF@phil.frb.org

FEDERAL RESERVE BANK
PHILADELPHIA

Ten Independence Mall
Philadelphia, Pennsylvania 19106-1574

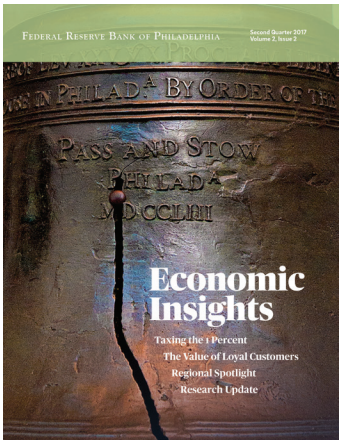
PRESORTED STANDARD
U.S. POSTAGE

PAID

PHILADELPHIA, PA
PERMIT #583

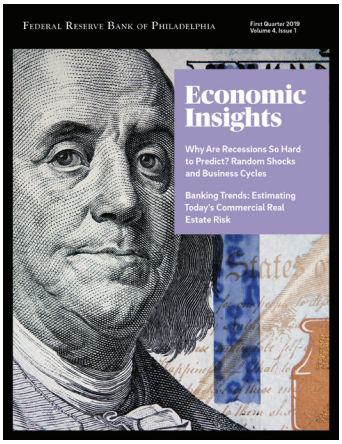
ADDRESS SERVICE REQUESTED

## From Philadelphia, Pennsylvania, the birthplace of American finance, comes *Economic Insights*.



2017 Q2

2018 Q1



2019 Q1

2020 Q1

## Featuring articles about how Americans work, invest, spend...and so much more.

2021 Q1

2021 Q2

2021 Q3

2021 Q4