

# ECONFOCUS



## IS EVERYONE'S INFLATION DIFFERENT?

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**When Interstates Paved the Way**

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**Corporate Taxes Across Borders**

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**Interview with Aysel Şahin**

# ECON FOCUS

**Econ Focus** is the economics magazine of the Federal Reserve Bank of Richmond. It covers economic issues affecting the Fifth Federal Reserve District and the nation and is published by the Bank's Research Department. The Fifth District consists of the District of Columbia, Maryland, North Carolina, South Carolina, Virginia, and most of West Virginia.

**DIRECTOR OF RESEARCH**

Kartik Athreya

**DIRECTOR OF PUBLICATIONS**

Jessie Romero

**EDITOR**

David A. Price

**MANAGING EDITOR**

Lisa Kenney

**STAFF WRITERS**

John Mullin

Hailey Phelps

Tim Sablik

**EDITORIAL ASSOCIATE**

Katrina Mullen

**CONTRIBUTORS**

Neeraja Deshpande

Stephanie Norris

Sonya Ravindranath Waddell

**DESIGN**

Janin/Cliff Design, Inc.

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of Richmond

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[www.richmondfed.org](http://www.richmondfed.org)

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## FEATURES

### 10 BRINGING THE FARM INDOORS

New technology is changing where and how some crops are grown

### 14 CORPORATE TAXES ACROSS BORDERS

Governments across the globe recently reached agreement in principle on measures to counter the tax avoidance strategies of multinational corporations

## DEPARTMENTS

### 1 PRESIDENT'S MESSAGE

Do Employees Expect More Now?

### 3 UPFRONT

New from the Richmond Fed's Regional Matters blog

### 4 FEDERAL RESERVE

Is Your Inflation Different?

### 8 AT THE RICHMOND FED

Benefits Cliffs

### 9 RESEARCH SPOTLIGHT

Bolstering Regional Economies

### 18 INTERVIEW

Ayşegül Şahin

### 24 ECONOMIC HISTORY

When Interstates Paved the Way

### 28 THE PROFESSION

The Economist as Consultant

### 29 POLICY UPDATE

Child Care Legislation During COVID-19

### 30 DISTRICT DIGEST

What Difference Does a Minimum Wage Make? The Minimum Wage and the Fifth District

### 35 BOOK REVIEW

*The Power of Creative Destruction: Economic Upheaval and the Wealth of Nations*

### 36 OPINION

Is the Fed Too Active?

# Do Employees Expect More Now?

Job openings topped 10 million in June, the highest level in the 20-year-plus history of the data. We hear businesses are struggling to fill those openings, and the issue is particularly acute for low-wage positions. This difficulty is, of course, strange given there are about 6.5 million fewer people employed today than in February 2020.

Our contacts offer a variety of reasons why labor supply might lag demand. Some point to a continued fear of infection or logistical barriers related to remote schooling or child care. Others point toward increased retirements or the adverse incentives created by enhanced unemployment insurance. Still others believe workers have reassessed their perspectives on work versus time at home.

Economics has an explanation for this: an increase in the “reservation wage.” The reservation wage is the lowest wage an unemployed person is willing to accept for a new job. If an individual’s reservation wage rises above an employer’s offered wage, then the individual will likely keep looking for another opportunity or even opt out of the labor force.

We have data to validate that reservation wages have increased over the past year, especially for individuals making less than \$60,000 per year and those without college degrees. The New York Fed conducts a regular survey that asks respondents for the lowest wage they would be willing to accept for a new job. Between March 2020 and March 2021, the average reservation wage for those making less than \$60,000 and those without college degrees went up more than \$10,000 (26 percent). This increase is far in excess of the range that the survey has seen historically for these groups.

In comparison, the average reservation wages of those making more



than \$60,000 and those with college degrees only increased about 3 percent and 6 percent, respectively, during the same time period. What spurred this increase in reservation wages?

Part of the answer may be the impact of the pandemic experience. Increased health or child care concerns or better understanding the pain of a commute might elevate the costs that individuals associate with a job. At the same time, enhanced unemployment insurance might make staying unemployed more feasible. Bolstered savings might reduce the sense of urgency.

Another force seems to be playing a role: the dialogue around a \$15 federal minimum wage. To be clear, efforts to increase the minimum wage have existed for years. But the outpouring of gratitude for essential workers, support for stimulus to jump-start the economy, and a new Congress gave that movement renewed energy this spring. Congress didn’t pass a new bill, but there are signs that \$15 has become a wage anchor point.

For one, several states and cities are moving toward \$15 without waiting

for federal change. Pre-pandemic, seven states and the District of Columbia had committed to reach \$15 over time. Last year, Florida joined this list, representing a broadening consensus beyond traditional progressive states and localities.

In addition, the private sector increasingly seems to be adopting a similar message. In the last few months, a number of large employers, such as Southwest Airlines and Under Armour, have announced bumps in entry level wages to \$15. In perhaps the strongest evidence of the importance of the “\$15 anchor,” several others, like Chipotle and McDonald’s, have announced an *average* \$15 starting wage. Presumably, those firms see an advantage to adopting the number in messaging even if they do not adopt the wage floor.

This combination of private and public momentum could be boosting workers’ expectations, which in turn raises their reservation wages. Google searches for “\$15 minimum wage” reached their all-time high in the first quarter. And higher worker expectations could be pushing employers to raise wages, further cementing the higher wage floor.

Whether due to pandemic factors or expectation shifts, economic theory gives us a pretty good idea of the implications of a reservation wage increase. If fewer jobs meet individuals’ standards, then fewer people enter or remain in the workforce. If there are fewer people in the workforce, employers must raise wages or lower their dependency on labor. If employers raise wages, they likely pass on part of the increased labor cost to consumers via higher prices. If they lower their dependency on labor instead, they turn to automation or offshoring, or make adjustments to the quantity or quality of their products.

We already see this theory happening around us. As I discussed in an essay last month, we see wages for lower-skilled workers rising as workforce participation stays stubbornly low. We also see price increases. While other factors, such as supply bottlenecks, are contributing to inflationary pressures, businesses also point to wage pressure. For example, Chipotle linked its latest price hike to wage increases.

And in sectors struggling to find labor, firms are finding ways to reduce their reliance on workers: turning to automation, offloading tasks to customers or third parties, reducing the frequency of service, or sacrificing quality. If you have taken a trip this summer, you have experienced this. Perhaps your airline rescheduled your flight. Perhaps you waited longer to be served at dinner or ordered your meal through a QR code menu. Perhaps your hotel stay came without daily housekeeping.

It is too early to tell whether this increase in reservation wages is temporary or permanent. If labor

supply gets a boost over the next few months, as vaccines hopefully help put the virus behind us, enhanced unemployment ceases, and schools reopen, then wage and price pressures should ease, and the incentive to reduce labor should weaken. We will see.

One area to watch in the near term is how employment evolves in states that are ending enhanced unemployment insurance early. I am paying close attention to real-time data on job search activity.

In the longer term, there are a few other areas worth watching.

How durable is the expectation of a \$15 minimum wage? While current expectations might act as an effective anchor, this could be less durable than a minimum wage codified in law. It is possible that a negative labor demand shock in the future could lead to lower wages in a way that would not be likely with an official wage floor.

How will businesses' compensation strategy shift? We may see employers tweak the balance between wages and benefits in response to the higher reservation wage. Some may

move toward higher wages and away from fringe perks to present an offer that meets workers' mental model of what wages should be. Others may try to better communicate the monetary value of their fringe benefits, as happens with cafeteria plans that place an explicit financial value on a benefits package.

What will be the impact on wages more broadly? Higher entry wages compress pay scales of current workers who often respond with demands for higher compensation for themselves. The broader the reverberations, the greater the resulting pay and price pressure.

The fall will bring much change: Schools will reopen, employees will return to offices, and government assistance will decline. We'll be keeping our eyes on the effects of these factors on the reservation wage and, in turn, on the economy. **EF**

#### OUR RELATED RESEARCH

“Male Labor Force Participation: Patterns and Trends,” *Econ Focus*, First Quarter 2021

“Incarceration’s Life-Long Impact on Earnings and Employment,” Economic Brief No. 21-07, March 2021

“High Labor Market Churn During the 2020 Recession,” Economic Brief No. 21-06, February 2021

“Learning About the Labor Market from High-Frequency Data,” *Econ Focus*, Second/Third Quarter 2020

“Projecting Unemployment and Demographic Trends,” Economic Brief No. 19-09, September 2019

“Workers’ Shrinking Share of the Pie,” *Econ Focus*, Second/Third Quarter 2019

BY KATRINA MULLEN

## New from the Richmond Fed's Regional Matters blog

### McCord, Roisin, and Laura Dawson Ullrich. "Community College Enrollment in Fall 2020: What We Know So Far."

Unlike in past recessions, community college enrollment in fall 2020 decreased, especially among minority male students. (See "Male Labor Force Participation: Patterns and Trends," *Econ Focus*, First Quarter 2021.) The Fifth District followed similar trends nationally, with enrollment declining anywhere from 4.3 percent in Maryland to as much as 17.4 percent in West Virginia. Two community colleges in Virginia, however, experienced a different pattern. Germanna Community College in the Fredericksburg area and Dabney S. Lancaster Community College in Clifton Forge not only provided students with timely, organized transitions to online or hybrid learning, but also offered "wraparound" services such as government aid and benefits programs.

### Kosakow, Jason. "Regional Businesses Returning to Pre-COVID-19 Operations."

Many businesses in the Fifth District, like in much of the country, closed their doors and shifted to remote work when the COVID-19 pandemic hit. The Richmond Fed's business surveys in May suggested that increased vaccination rates and lifted restrictions contributed to the return that month of some on-site work and business-related travel. According to the surveys, nearly all firms within the manufacturing and service sectors think employees will have the option to work on-site by the end of the year. Additionally, since firms believe remote work has largely been successful, many are expecting remote or hybrid work to continue or increase.

### Norris, Stephanie, and Peter M. Dolkart. "Is Rental Assistance Getting to Those in Need?"

Between December 2020 and March 2021, Congress allocated \$46.6 billion toward households struggling to pay rent or utilities. States in the Fifth District, including the District of Columbia, received \$4.3 billion in emergency rental assistance for the most hard-hit areas. While state and local governments can disperse the funds through new or existing programs, many have been slow to act due to administrative hurdles and staffing needs. For example, North Carolina repurposed its Office of Recovery and Resiliency, originally created for hurricane housing support, to focus on rental relief. The office more than tripled its staff but still could not keep up with the large backlog.

### Taylor, Sam Louis. "Coronavirus State and Local Fiscal Recovery Funds: How Do They Work and What Does It Mean to the Fifth District?"

The American Rescue Plan, enacted by Congress in March, includes the \$350 billion Coronavirus State and Local Fiscal Recovery Funds to support states, counties, territories, tribes, and local governments with their economic recovery. Funding within the Fifth District varies by type: \$19.1 billion for states and the District of Columbia, and \$11.5 billion for municipalities. Maryland, Virginia, and North Carolina are the only states within the district to have released detailed proposals ranging from increasing funding for unemployment services to investing in schools and closing the digital divide.

### Mengedoth, Joseph, and Alexander Nikolov. "Eyes on the Roads (and Bridges) in the Fifth District."

Over the last decade, roadway quality in the Fifth District has generally declined while bridge quality has generally improved. In fiscal 2020, nearly 2,100 projects in the district, not including the District of Columbia, received federal funds. Less than half of the total cost of these projects, however, was covered by federal dollars. In South Carolina, federal dollars accounted for only 30 percent of total costs, while in West Virginia it was 77 percent. Overall, the majority of federal funding in the district went toward reconstructing and repairing existing infrastructure, followed by expanding existing capacity and constructing new roads or highways.

### Marré, Alexander, and Alexander Nikolov. "Rural Spotlight: Bringing Broadband to Maryland's Eastern Shore."

Maryland's Eastern Shore is one of many rural communities that relies on electric cooperatives for access to broadband internet service. While rural broadband is expensive, one study found that without access to high-speed broadband, consumers lose nearly \$23 billion in economic benefits each year. In the first article of the Rural Spotlight series, the Richmond Fed's Regional and Community Analysis team highlighted Choptank Electric Service, an electrical cooperative with an 80-plus year history that has evolved to include a broadband subsidiary, Choptank Fiber. With broadband in high demand along Maryland's Eastern Shore, Choptank used its relationships, employees, and resources — and connected its first customer this spring. **EF**



BY TIM SABLİK

## Is Your Inflation Different?

Not everyone experiences the same inflation. What does that mean for monetary policy?

**F**or much of the last two decades, if inflation drew any mention from economists or central bankers, it was mostly to note how low it was. But after more than a year of accommodative fiscal and monetary policy in response to the COVID-19 pandemic, the conversation has shifted. Official inflation measures have ticked up in recent months to levels not seen in decades.

Under the Fed's new monetary policy framework announced last year, the Federal Open Market Committee (FOMC) has signaled a greater willingness to allow inflation moderately above its 2 percent long-run target for some time following a period of inflation below target. In the past, the Fed often acted to preempt a rise in inflation, but policymakers have indicated they will now wait to change interest rate policy until inflation pressures actually emerge in the data. (See "The Fed's New Framework," *Econ Focus*, First Quarter 2021.)

At a press conference following the April 27-28 FOMC meeting, Fed Chair Jerome Powell said that before increasing interest rates, "We want to see labor market conditions consistent with maximum employment, we want to see inflation at 2 percent, and we want to see it on track to exceed 2 percent."

But which inflation signals will Fed officials be watching? Inflation is typically defined as a generalized and sustained increase in prices across the economy. But prices rarely change evenly across all goods and services at the same time. Recently, for example, prices for lumber and used cars shot up due to supply constraints coupled with increasing demand. Moreover, households spend money on different things. That means an uptick in inflation in some products or services could affect



households unevenly. Should central bankers take this into consideration when determining the appropriate stance for monetary policy?

### **BUILDING AN INFLATION INDEX**

Measuring inflation requires tracking what people buy as well as how much they pay for it. Doing that for every purchase across the entire economy is a daunting task for any researcher. Some U.S. economists experimented with creating price indexes for a limited set of goods in the 19th century. The federal government became involved in tracking prices following the creation of the Bureau of Labor Statistics (BLS), then called the Bureau of Labor, in 1884.

According to a 2014 history by BLS economist Darren Rippey, the BLS first started working on a cost-of-living index for families by studying expenditures and retail prices from 1888 through 1890. At the turn of the 20th century, presidents increasingly called upon the BLS to mediate labor disputes between industry and union leaders and to track price changes during the two world wars. This work ultimately led to the creation of the Consumer Price Index, or CPI.

Although the methodology behind the CPI has evolved over the decades, the BLS's fundamental approach has remained the same. It surveys households about the goods and services they buy and collects data on prices using both surveys and on-the-ground

research. Using this data, the BLS constructs a “market basket” of goods and services intended to capture the consumption patterns of the average urban household. Goods and services are lumped into one of eight large groups and receive weights based on their share of the typical household budget. Price changes for goods and services that account for a larger share of household spending carry more weight in the overall CPI measure of inflation.

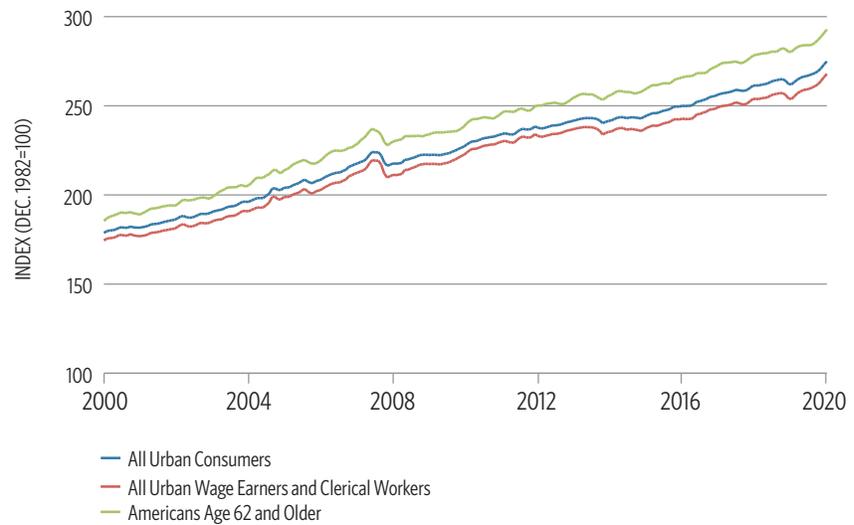
Over time, the CPI has become the most widely used and cited benchmark for inflation in the U.S. economy. Firms look at it when making decisions about adjusting their prices and wages. And the federal government uses the CPI to make cost-of-living adjustments to welfare programs like Social Security as well as to update tax brackets.

That said, the CPI has limitations, which have prompted the development of other price indexes. The basket of goods that households purchase is not static. Consumers respond to price increases in some goods by substituting cheaper alternatives. For example, if the price of beef goes up, households might buy less beef and more chicken. The BLS does periodically update its market basket, but on a lag, meaning the CPI doesn’t capture substitutions like these until long after the fact. For instance, from the end of 2017 through the end of 2019, the BLS used consumer survey data collected in 2015 and 2016.

This can result in mismeasurement when consumption habits are changing rapidly. A 2020 paper by Alberto Cavallo of Harvard University found that the CPI underestimated inflation during the COVID-19 lockdown. That is because households spent more on things like food, which experienced inflation, and less on fuel and transportation, which experienced deflation. Cavallo estimated that because of these changes in household consumption, actual inflation in the United States in September 2020 was 1.9 percent, compared to 1.4 percent according to the CPI.

## Older Households Experience Higher Inflation

A Comparison of Different CPIs



NOTE: “Americans Age 62 and Older” is an experimental CPI constructed by the BLS.  
SOURCE: U.S. Bureau of Labor Statistics

Other inflation measures, like the Personal Consumption Expenditures (PCE) price index released by the Bureau of Economic Analysis, attempt to account for consumer substitutions when constructing their market basket. The PCE also applies different weights to goods and services than the CPI.

Both the CPI and PCE also have “core” measures of inflation, which strip out price changes for food and fuel. While both of those categories make up an important part of many households’ budgets, their prices tend to be more volatile in the short run. Their inclusion in price indexes can muddy the long-run inflation signal, which matters for institutions like the Fed tasked with keeping long-run prices stable. For these reasons, the Fed has used core PCE as its benchmark measure of inflation since 2000.

### WHAT DO HOUSEHOLDS EXPERIENCE?

The goal of inflation indexes like the CPI and PCE is to produce a single measure of inflation for the whole economy. To do that, researchers attempt to capture changes in the cost

of living experienced by the average household. It should come as no surprise, then, that the experiences of many households deviate from that average.

Households spend money on different things and pay different prices for the same types of goods and services. The BLS Consumer Expenditure Survey, which tracks households’ spending by income and other demographic characteristics, shows that low-income households spend a greater share of their income on core needs — housing, food, and transportation — than higher-income households. Household spending and income also vary considerably by age. People spend a greater share of their income on health care as they age. Prices for both medical care and education have been rising more rapidly than prices for goods and services generally. As a result of these and other consumption differences, any given household could be experiencing inflation that is very different from the CPI or PCE numbers. Indeed, the BLS has constructed an experimental CPI for older Americans, which shows they tend to experience higher inflation. (See chart.)

“There is no such thing as ‘the’ inflation rate,” says Greg Kaplan of the University of Chicago, whose research has explored price dispersion for goods and services. “The economy is made up of billions of prices, all moving differently.”

Economists have long been aware that groups might face different inflation rates because of different consumption patterns. Several studies have attempted to measure this by creating separate market baskets based on household characteristics, such as age, income, or education. A 2005 article by Bart Hobijn of the San Francisco Fed and Arizona State University and David Lagakos of Boston University found that household inflation rates varied substantially around the reported CPI numbers from 1987 through 2001. This variation was mostly driven by higher inflation rates for education, health care, and gasoline, which made up different shares of household budgets. For example, older households experienced higher inflation because of their higher health care expenses, as did lower-income households because they are more sensitive to changes in gas prices.

Households could also be experiencing different inflation because they pay different prices for the same types of goods and services. More recently, economists have been able to use richer price datasets collected from retail stores with price scanners to study how much people actually pay for things. In a 2017 article in the *Journal of Monetary Economics*, Kaplan and Sam Schulhofer-Wohl of the Chicago Fed used price scanner data collected from 500 million transactions from 2004 through 2013 to estimate household inflation differences. They found that the annual inflation households experienced varied by as much as 9 percentage points, and most of that variation was driven by the households paying different prices for the same goods. In Kaplan and Schulhofer-Wohl’s sample, this resulted in households earning less than \$20,000 a year experiencing

higher inflation than those making more than \$100,000 a year.

There are several other reasons why low- and high-income households might pay different prices for the same types of goods. A 2021 paper by David Argente of Pennsylvania State University and Munseob Lee of the University of California, San Diego found that higher-income households were better able to substitute away from goods with increasing prices during the Great Recession, reducing the inflation they experienced compared to lower-income households.

This could have been facilitated by a greater array of choices for products available to high-income households. A 2019 article in the *Quarterly Journal of Economics* by Xavier Jaravel of the London School of Economics and Political Science found that from 2004 to 2015, there was greater innovation and competition in products catering to high-income households than low-income ones. He argued that this kept prices for those products down, allowing high-income households to experience lower inflation.

### DO THESE DIFFERENCES MATTER?

These studies clearly point to the fact that inflation varies across households. How might that matter for policymakers?

The answer partly depends on how persistent these differences are. For example, if low-income households always experience higher inflation than high-income households, that would mean that the income inequality gap is actually growing faster than aggregate inflation measures would suggest. And if older households always experience higher inflation than younger households because of medical expenses, then cost-of-living adjustments based on overall CPI to programs like Social Security could be undershooting the needs of recipients.

But many of the studies that found evidence of household inflation differences also found that those differences

weren’t persistent. In their 2005 article, Hobijn and Lagakos found that a household that experienced higher-than-average inflation in one year didn’t necessarily experience it in the next year. And in a 2009 paper with co-authors, Hobijn also found that most characteristics like income or age were poor predictors of how much inflation a household would experience. Inflation varied more within groups of households than across groups. Kaplan and Schulhofer-Wohl came to similar conclusions in their 2017 study.

“Household inflation differences do not tend to accumulate over time, except for households that spend a significant part of their income on tuition and medical care,” says Hobijn.

As a result, household-specific inflation indexes tend to follow aggregate measures like the CPI or PCE over the long run.

Still, even short-term inflation differences across households could matter when there is a sudden, unexpected change in inflation. For example, it is well-known that an unexpected spike in inflation redistributes wealth from lenders to borrowers, since borrowers can pay back their debts with money that is worth less than when they took out the loan. If certain groups of households tend to experience higher inflation at any given time, then they could also be more exposed to a sudden change in prices.

Similar to Jaravel’s finding, Javier Cravino and Andrei Levchenko of the University of Michigan and Ting Lan of the International Monetary Fund documented in a 2020 article in the *Journal of Monetary Economics* that the prices for goods consumed by high-income households tend to be “stickier,” meaning they don’t change as much as the prices for things consumed by middle-income households. This would insulate higher-income households from an unexpected spike in inflation. Additionally, households that own their homes might also be better insulated from inflation shocks than renters, since the interest rates on many

mortgages are fixed and don't change if other rates in the economy go up. This would also tend to favor wealthier households.

At the same time, other studies point to ways that some poorer households may also be able to insulate themselves from unexpected inflation. A pair of 2015 articles found that unemployed individuals experienced lower inflation than workers, on average. This seems to be because they were able to allocate more time to visiting a variety of stores in search of the lowest prices.

### IMPLICATIONS FOR THE FED

What should monetary policymakers make of household inflation differences? The FOMC has explicitly stated that it views the Fed's price stability mandate from Congress as a long-run goal.

"The inflation rate over the longer run is primarily determined by monetary policy, and hence the Committee has the ability to specify a longer-run goal for inflation," the FOMC wrote in its statement on longer-run goals and monetary policy strategy, last affirmed in January 2021.

On one hand, given this long-run view, it makes sense for policymakers to focus on aggregate measures of inflation for the whole economy that strip out as much short-run variability as possible, like core PCE. The New York Fed has developed an Underlying Inflation Gauge specifically to try and track movements of persistent inflation in the economy. Likewise, the Atlanta Fed created a sticky-price

CPI composed of a basket of goods that change prices rarely in order to measure the underlying, long-run inflation trend.

On the other hand, if households experience different levels of inflation, that could influence the effectiveness of any monetary policy changes the Fed makes. For instance, Cravino, Lan, and Levchenko noted in their article that because the prices of goods consumed by high-income households are stickier, their response to a monetary policy shock will be lower than the response of middle-income households.

Surveys have also often demonstrated that many households misestimate the level of inflation in the economy as measured by the CPI or PCE. This has sometimes been interpreted as households simply being uninformed. But in their 2017 article, Kaplan and Schulhofer-Wohl theorized that if households are in fact facing different levels of inflation, it could explain why they don't pay much attention to aggregate inflation measures. That could make it challenging for the Fed to use monetary policy to steer inflation across the entire economy.

"When the dispersion of inflation rates across households is large, it seems challenging for the Fed to be able to fine-tune average inflation," says Kaplan.

Differences in experienced inflation also feed into different expectations for future inflation, complicating the Fed's job of trying to keep long-run expectations anchored near its 2 percent target.

Finally, broad price indexes like the

CPI and PCE that are slow to adjust to changes in consumer behavior can send the wrong signals to policymakers in times of crisis. As Cavallo's 2020 paper on the COVID-19 lockdown suggests, inflation in the United States was moderately higher than aggregate measures indicated at the time. Jaravel and Martin O'Connell of the Institute for Fiscal Studies had similar findings in a 2020 article that looked at inflation in the United Kingdom during the pandemic.

The Fed has shown an interest in learning more about the variation in household inflation rates. In 2015, the Chicago Fed created the Income Based Economic Index to measure inflation rates for different socioeconomic and demographic groups. The market baskets for each group were constructed using the BLS Consumer Expenditure Survey data. Overall, the Chicago Fed found few persistent differences across groups, although older households experienced somewhat higher inflation, while lower-income and lower-education households experienced inflation that was more variable.

The Fed's new monetary policy framework places greater emphasis on the varying employment experiences of different groups, declaring its maximum employment mandate a "broad-based and inclusive goal." The new framework doesn't describe the Fed's inflation goal in that way, but it is possible that policymakers may also take an increased interest in studying how different groups experience inflation. **EF**

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# AT THE RICHMOND FED

BY NEERAJA DESHPANDE

## Benefits Cliffs

In 1977, Congress tasked the Fed with the dual mandate of promoting price stability and maximum employment, the latter of which the Federal Open Market Committee has described as “a broad-based and inclusive goal.” Tiffany Hollin-Wright, the Richmond Fed’s community development manager for Virginia and West Virginia, views the community development team’s work as being part of this bigger goal. “What we want to do is find out what the barriers are for maximum employment and determine how to increase labor market participation,” she says. “Our high-priority objectives at the Richmond Fed are related to economic inclusion.”

With this aim in mind, the community development team has been working to educate policymakers and workers in the Fifth District about benefits cliffs. Benefits cliffs occur when an increase in income for low-income individuals and families actually makes them worse off, because their earnings rise by enough to render them ineligible for the public benefits that they were previously receiving, but not by enough to afford them what the benefits would have otherwise provided. For many low-income workers, benefits cliffs can pit long-term career progression and earnings against short-term needs and can impede upward economic mobility.

The community development department’s work on this issue began in spring 2020, when Hollin-Wright received an inquiry from the Richmond-based Robins Foundation, a nonprofit that seeks to break generational cycles of poverty. In response, she began a collaboration among the Richmond Fed, the Atlanta Fed, the Robins Foundation, and the City of Richmond’s Office of Community Wealth Building.

Erika Bell, the Richmond Fed’s community development manager for North Carolina and South Carolina, sees the resulting effort as “creating a framework around benefits cliffs and how individuals and families can overcome them.” One part of this framework, says Bell, is the Career Ladder Identifier and Financial Forecaster (CLIFF) online offerings, which were created by the Atlanta Fed to model a person’s net financial resources, including earned income and public assistance. The aim of these tools is to increase the public’s knowledge about benefits cliffs, to allow workforce providers, philanthropists, and policymakers to better understand how to lessen the severity of these cliffs, and to help workers be better informed as to which careers are the best pathways to financial security.

The CLIFF suite of products consists of a state-customized CLIFF dashboard for policy simulation and a CLIFF Planner

for professional career advisers to devise five-year financial and career plans for their clients, as well as training for career advisers on how to use the planner. There is also a CLIFF Guaranteed Income dashboard, which the Richmond Fed and the Atlanta Fed have used together with the Robins Foundation and the City of Richmond Office of Community Wealth Building to simulate the effect of unconditional cash payments on the economic stability of low-income families who experience loss of public benefits.

On top of supporting policymakers and career advisers, the community development team’s initiatives that leverage CLIFF dashboards and tools have the potential to reach thousands of workers via intermediaries and state agencies. The Richmond Fed and the Atlanta Fed have established a partnership with the U.S. Department of Health and Human Services Administration for Children and Families to heighten awareness of the benefits cliffs dynamic and to share opportunities for states to customize the CLIFF dashboard based on local costs of living as well as public benefits policies.

Both Reserve Banks have also implemented memoranda of understanding with various organizations that support workers, including the Virginia Goodwill Network, the City of Richmond Office of Community Wealth Building, Virginia Local Initiatives Support Corp., United Way of Central Maryland, Goodwill Industries of the Southern Piedmont, and ReWork Richmond.

These organizations will use the CLIFF framework to inform their workforce programs and practices in addition to policies that smooth benefits cliffs and help stabilize families.

The community development team hopes that by 2022, the public will be able to access CLIFF tools on state and agency websites. Until then, the team wants employers to be aware of benefits cliffs dynamics and the CLIFF products so that they know how best to help their workers attain better economic outcomes. “This is a tool that can support our workforce ecosystems to identify and mitigate barriers to worker retention in high-demand career pathways,” emphasizes Hollin-Wright.

For the Richmond Fed, says Hollin-Wright, “This benefits cliff work is not just a one and done, but an opportunity to inform policy and practices in the short term that promote economic inclusion and beneficial occupational transitions to higher wages in the long term.” **EF**

**Benefits cliffs occur when an increase in income for low-income individuals and families actually makes them worse off. Benefits cliffs can impede upward economic mobility.**

BY NEERAJA DESHPANDE

# Bolstering Regional Economies

**Esteban Rossi-Hansberg, Pierre-Daniel Sarte, and Felipe Schwartzman.** “Local Industrial Policy and Sectoral Hubs.” *American Economic Association: Papers and Proceedings*, May 2021, vol. 111, pp. 526-531.

In recent years, the United States has seen many regions struggle economically while others thrive due to their so-called “superstar” cities — think San Francisco or Seattle for tech, or Boston for the biomedical industry. Some policymakers, researchers, and commentators have expressed their belief that a concerted federal investment in technology, or in research and development, can help level the playing field nationwide and spur economic growth. But is it optimal for all localities to specialize in the same sorts of industries?

A February 2021 paper by economists Esteban Rossi-Hansberg of Princeton University and Pierre-Daniel Sarte and Felipe Schwartzman of the Richmond Fed suggested that the answer to this question is no. Instead, they found that localities should double down on their existing strengths if they want to thrive economically. Cities that employ a large share of workers in cognitive nonroutine (CNR) occupations like medicine, law, engineering, or research should further concentrate workers in those jobs, due to the positive, productivity-enhancing external effects that arise from people working with each other. Conversely, smaller cities that employ a large share of non-CNR workers should focus on expanding the industries that they currently have.

In a more recent May 2021 paper published in the *American Economic Association: Papers and Proceedings*, Rossi-Hansberg, Sarte, and Schwartzman built on their earlier findings and analyzed the desirability

of industrial policies that might strategically help develop the economies of certain regions within highly concentrated “sectoral hubs.” They found that as far as the optimal policy is concerned, the large sectoral hubs in easily tradable services — such as professional services — that currently exist should persist, and the smaller hubs in less tradable services — such as health care and education — should also persist, albeit in a smaller and more localized capacity. The rest of the economy, under this optimal policy, should balance between tradable and nontradable services, with a particular emphasis on restoring and bolstering traditional manufacturing towns.

These conclusions are based on the paper’s model, which assumes that externalities arise from the composition of local labor markets and influence workers’ labor productivity. This aspect of the model means that externalities vary from industry to industry; in other words, some industries may experience more benefits from stronger externalities than others.

The authors used this model to determine where workers will choose to work and live. They found that in equilibrium, the decisions that workers make for themselves do not align with the living decisions that would most benefit society as a whole. Since workers positively influence each other and become more productive when in the same vicinity, the ideal scenario is one in which workers within similar profession groups concentrate geographically so that the productivity gains that allow local economies to thrive are fully realized.

Using wage and employment data, as well as data on the dependencies between different sectors, the authors then quantified the model and tested it empirically. After estimating the degree to which local externalities are present

within industries, they ran regressions on four industry groups: health and education; professional and other services; manufacturing; and accommodation, wholesale trade, and transportation. Their statistical analysis indicates that workers, particularly those in CNR occupations and those in manufacturing, have the most to gain from being around others who work in the same industries.

The authors then considered what the socially optimal geographic allocation of workers would be under the optimal policy. Costs for health care and education fall in larger cities, production becomes more concentrated along the U.S. coasts, and total-factor productivity, a proxy for efficiency and a key component of economic growth, increases. In most cities, wage growth increases by only slightly more than the total-factor productivity gains with respect to health care and education, but in San Francisco and San Jose, Calif., and Washington, D.C., wage growth far outpaces total-factor productivity and increases the cost per unit of each service. In these cities, the high level of specialization in professional services results in increased CNR wages to the point where health care and education are crowded out.

Manufacturing operates slightly differently, with the optimal policy leading to more evenly dispersed production across many smaller cities, most of which are too small to become manufacturing hubs.

“Different places can do different things, and different industries can fit in different places,” says Sarte. It follows that when localities “leverage their strengths,” as Sarte puts it, they can make themselves, their workers, and their economies better off. The paper concludes, “With the right incentives, sectoral hubs can yield shared gains for everyone.” **EF**

# BRINGING THE FARM INDOORS

*New technology is changing where and how some crops are grown*

BY TIM SABLİK

This vertical farm, created by Freight Farms, uses energy-efficient LED lights, which help farmers have greater control over the amount of light plants receive.

**O**n April 29, Newark, N.J.-based AeroFarms broke ground on a new farm in Danville, Va. When it opens for business next year, it will be the largest farm of its kind in the world. Yet compared to the typical commercial farm, it will occupy a tiny amount of land — just over 3 acres. Rather than planting in sprawling outdoor fields, AeroFarms will grow its crops indoors.

AeroFarms' new facility is one of many vertical farms being built in the United States and around the world. Vertical farming is a form of controlled environment agriculture (CEA), which uses a range of technologies and techniques to optimize plant growth and minimize the risks and variability found in outdoor growing. And, as the name suggests, vertical farms grow up rather than out. Racks

of plants can be stacked on top of each other, allowing the farm to economize on space. That is particularly valuable for farmers looking to grow food in places where land is scarce, such as cities.

Proponents of vertical farming and CEA in general argue that it can help increase the supply of healthier, more sustainable, and more local food. But can it compete with traditional outdoor farming?

## TAKING CONTROL

One of the main benefits of growing indoors is that it affords farmers much greater control over their environment.

“Mother Nature introduces all this variability and risk to yields and harvest timing,” says Michael Evans, director of the School of Plant and

Environmental Sciences at Virginia Tech and associate director of the Controlled Environment Agriculture Innovation Center (CEAIC). “With a vertical farm or greenhouse, you get a lot more control over the environmental conditions.”

Plants in indoor farms are protected from unexpected changes in the weather, as well as from pests and many diseases found outdoors. Farmers can control temperature and airflow in the facility as well as the amount of water, nutrients, and light each plant receives. This enables farmers to grow crops year-round, regardless of season and climate, with greater consistency and predictability. That is increasingly valuable as changing climates have injected greater uncertainty into farming.

Shenandoah Growers, based in Rockingham, Va., started out as a field

©Freight Farms

IMAGE: CAROLINE KATSIROUBAS/FREIGHT FARMS

farming operation in 1989. But around 2008, they decided to take their farming operations indoors.

“We were already seeing the disruption in growing cycles from climate change, and it was impacting our ability to be commercially viable,” says Cameron Geiger, Shenandoah Growers’ chief operating officer. “We wanted to be able to have more control over weather events to make sure we could continue to be a cost-effective supplier to retailers.”

The control afforded by CEA doesn’t come free, however. Relying on technology rather than Mother Nature to grow plants can be expensive, depending on the setup. Plants grown outdoors get their light for free from the sun, whereas those grown indoors are either partially or entirely reliant on artificial lighting powered by electricity. Controlling the temperature and airflow in an indoor farm also requires energy to power heating, ventilation, and air conditioning systems.

That said, indoor farms can be more efficient than outdoor farms in many respects. Most indoor farms grow plants in a water-based nutrient solution — a technique known as hydroponics. In addition to not needing soil, hydroponic systems typically use much less water than outdoor farms. Water can be reused instead of being lost to runoff or evaporation.

Technological advances have also helped indoor farms make strides toward improving the efficiency of their artificially supplied resources, such as light.

“The main driver that has reignited interest in growing plants indoors recently is the ability to produce light with light-emitting diodes at high intensity using less energy,” says Ricardo Hernandez, a professor of horticulture science at North Carolina State University whose research focuses on light use in CEA.

The first light-emitting diode, or LED, bulbs were developed in the 1960s. They were costly to produce and not very bright, but LED technology has come a long way since then. In 2000, scientist Roland Haitz of HP Inc., formerly named the Hewlett-Packard Co., predicted that the cost per unit of light emitted by LEDs would fall by a

factor of 10 each decade and the amount of light they generated would increase by a factor of 20. So far, commercial producers have met or even exceeded “Haitz’s law,” as the prediction came to be known. In addition to improving energy efficiency in homes and powering displays in consumer electronics, modern LEDs have prompted a resurgence in indoor farming.

“Before LEDs, indoor farms mainly used fluorescent bulbs, which are actually an ideal spectrum for growing plants but not very energy efficient on a large scale,” says Hernandez. “That meant that 70 percent to 80 percent of the electricity for indoor farming was used to power the lights. Now, thanks to LEDs, that percentage has shrunk to maybe 30 percent to 40 percent of total electricity.”

With LEDs, farmers also have greater control over the spectrum of light plants receive, allowing them to tweak light recipes to generate optimal growth.

The specifics of every farming operation are different, but most estimates suggest that despite these recent gains in efficiency, indoor farming still faces an uphill battle on costs compared to outdoor farming. In 2019, Peter Tasgal, a food and agriculture consultant and CEA specialist, estimated that farming in a greenhouse or vertical farm is about three to five times more expensive than farming outdoors. And upfront costs for building a state-of-the-art vertical farm can be substantial: AeroFarms is investing \$53 million to build its new facility in Danville. Still, larger costs don’t necessarily rule out an economic case for CEA if consumers are willing to pay more for indoor-grown food.

## FEEDING DEMAND

Demand for organic food has been growing steadily year over year. According to the latest Census of Agriculture from the U.S. Department of Agriculture (USDA), sales of organic crops grew 38 percent from 2016 to 2019. And early indications are that the COVID-19 pandemic may have accelerated this trend. The Organic Trade Association reported that organic food sales jumped by nearly 13 percent in 2020.

While indoor farms don’t necessarily need to grow organic crops, they are well suited for it. Having a controlled environment naturally protects plants from pests, allowing indoor farmers to use fewer or even no pesticides. And growing plants without soil eliminates exposure to many types of plant diseases and removes the need for traditional fertilizers.

“Customers are savvier now. They don’t want pesticides and fertilizers sprayed on their food,” says Scott Lowman, director of applied research at the Institute for Advanced Learning and Research in Danville. In 2000, he co-founded a farm in Lynchburg, Va., aimed at meeting consumer demand for local and organic food. Now, he oversees the newly constructed CEAIC in partnership with Virginia Tech and the Virginia Seafood Agricultural Research and Extension Center in Hampton, Va.

Studies suggest that consumers are willing to pay extra to eat organic food, which could offset some of the costs associated with indoor farming. In a 2008 article, researchers at the USDA and the University of Georgia found that U.S. consumers were willing to pay premiums of 15 percent to 60 percent for organic produce. Moreover, chemicals, fertilizers, and seeds made up one of the highest spending categories for traditional farms in 2019, according to the USDA — so relying less on pesticides and fertilizers could also help indoor farms keep their prices competitive.

“We do not want to perpetuate a disparity where only wealthy people can afford to eat healthy,” says Geiger. “Our goal is to make it possible for our retail partners to sell organic produce to consumers at the same price as nonorganic so that the customer can make the choice.”

Currently, there are some limitations on what indoor farmers can profitably grow, however. While it is technically possible to grow any plant indoors, some crops require more space and resources than others.

“There are lots of crops that either because of the acreage or the energy required and their value, you are never going to grow them in a greenhouse or a vertical farm,” says Evans. That list includes most “agronomic” crops like wheat, rice, corn, and soybeans



Vertical farms, like this one at the Controlled Environment Agriculture Innovation Center in Danville, Va., use a range of technologies to optimize growth and minimize risks.

that form the bedrock of the world's food supply. For now, most vertical farms focus on leafy greens and herbs because they are high-value and grow well in small spaces. But as CEA expands, scientists are looking at ways to adapt more crops to indoor growing.

"A lot of current vertical farms are using genetics for plants that were designed to grow in the field," says Hernandez. "We are looking into using gene-editing technology to produce plant cultures that will excel in a vertical farm environment."

Evans says that at the CEAIC they are experimenting with growing micro tomatoes that were originally developed for ornamental agriculture. Their smaller size makes them well suited to fitting in vertical farm racks. And Geiger says that while Shenandoah Growers is currently focused on organic herbs and leafy greens because that is their core business, they are exploring expanding into other crops as well.

The technology for indoor agriculture can be used to grow more than just plants, too. The CEAIC partners with the Virginia seafood extension center because indoor aquaculture uses many of the same technologies as indoor agriculture. Lowman explains that early efforts to combine the disciplines ran into problems because growing plants and fish in the same water resulted in cross-contamination. But modern aquaponic systems treat and reuse water for both the plants and fish, allowing farmers to keep them separate but grow both in the same facility and conserve resources.

### RETHINKING WHERE WE GROW

In addition to increasing the overall supply of food, vertical farms also create opportunities to grow food closer to consumers. Because they aren't limited by available arable land, vertical farms can theoretically be built anywhere.

The biggest markets for food in America are in cities. More than 80 percent of Americans live in cities or metropolitan suburbs. That share is expected to continue rising despite some questions surrounding the future of cities in the aftermath of the COVID-19 pandemic. (See "Has the Pandemic Changed Cities Forever?" *Econ Focus*, First Quarter 2021.) But most food consumed by urbanites is imported, either from farms in rural America or other countries.

That wasn't always the case, but throughout the 19th and 20th centuries, farms became larger and more industrialized thanks to advancements in technology that generated economies of scale. As farms grew, it made more sense to locate them away from cities where land was cheaper and more abundant. At the same time, advancements in transportation technology made it easier and cheaper for cities to import food. While the early 1900s saw some attempts to continue farming in suburbs close to cities, those efforts dwindled as cities expanded.

Thomas Wheet grew up in Washington, D.C., where he currently manages the Bertie Backus Food Hub for the Center for Urban Agriculture

and Gardening Education at the University of the District of Columbia. Although having healthy food was always important to his family, he didn't think much about where that food came from. In that respect, he says he was like most city dwellers.

"I think there was a general feeling in cities that you could just show up at a grocery store and expect there to be avocados in December without really thinking about where they came from or how they got there," says Wheet.

Like the demand for organic food, demand for more locally grown food has been steadily increasing, and COVID-19 seems likely to accelerate this trend. For decades, most food has been produced on large farms and shipped to restaurants and grocery stores across the country. But during the pandemic, many of those supply chains were disrupted. (See "Unpacking the Meat Industry," *Econ Focus*, Fourth Quarter 2020.)

"People in cities realized that building resiliency into the supply chains is essential to make sure that we continue to have access to the foods that we take for granted," says Wheet.

Wheet adds that, historically, urban agriculture has tried to apply outdoor growing techniques to city spaces through projects like community or rooftop gardens. Although such gardens are valuable, the cost of land in cities makes it unlikely that such approaches could reach the scale to fully meet the demand of urban consumers. Wheet and others believe that vertical farming presents an

opportunity to get closer to meeting that demand for local produce.

Richmond, Va.-based Babylon Micro-Farms Inc. started as a project at the University of Virginia in 2016 to find food solutions for refugee camps. But CEO and co-founder Alexander Olesen says they quickly saw an opportunity to make food more accessible for everyone by developing small-scale vertical farms that could be installed directly inside a food service space.

“Modular solutions represent a more accessible alternative to the big, utility-scale farms that are prominent today,” says Olesen. “Our farms can be built in or close to the point of consumption, allowing the food service operator to increase their self-reliance for a lot of their highly perishable and often very high-value ingredients.”

Olesen says that their clients are willing to pay a premium to have access to those items year-round at peak freshness rather than rely on importing them from distant farms where they might lose flavor and nutrition in transit. Babylon’s team automates all of the growing decisions for their clients’ farms via the cloud, which means food service providers don’t need to have any farming expertise to grow their crops on-site.

Freight Farms Inc., founded in 2010 in Boston, Mass., has also taken a modular approach to farming. They build and sell vertical farms in storage containers, allowing people to have their own farm installed virtually anywhere. Their customers include entrepreneurs looking to start their own farming business, as well as institutions like schools that use the container farms as classrooms and to augment their cafeteria’s supply of fresh local greens.

“Because the farm is in a container, you can put it right next to the need,” says CEO Rick Vanzura. Freight Farms

reports that it has sold about 400 farms to customers in 49 states and U.S. territories and 33 countries, and on average its farms are no more than 20 miles away from the end consumer, providing both convenience and nutritional benefits.

“The average age of produce sitting on grocery shelves is about 12 days postharvest,” says Vanzura. “In that time, you lose a lot of texture, flavor, and nutrition. Over half of the nutritional value of plants is lost by the ninth day.”

## LOOKING AHEAD

In addition to shortening supply chains and boosting urban agriculture, many proponents of vertical farming tout the environmental benefits of growing and consuming more food locally.

But the evidence on that remains unclear. In a 2015 report, the USDA estimated that transportation only accounts for about 11 percent of greenhouse gas emissions from conventional agricultural production, and the mode of transportation matters more than the distance crossed. Large farming operations can take advantage of economies of scale in transportation, using water and rail shipping that generate fewer greenhouse gas emissions than trucking.

While food grown in smaller vertical farms like those produced by Babylon Micro-Farms or Freight Farms can be harvested very close to consumers, larger vertical farms still need to transport their products to customers, possibly using less environmentally friendly methods such as trucks. Additionally, indoor farms consume electricity that may be generated from fossil fuels to power their LEDs and other environmental controls, although many are exploring ways to get more of their energy from renewable sources. So the ultimate environmental impact of a

shift toward more indoor farming is, so to speak, up in the air.

Outdoor farming is unlikely to ever be completely replaced, though. Because of economies of scale, there will still be a need to grow some crops outdoors in rural areas where land is plentiful. But the tools and techniques being developed in CEA can benefit outdoor farming as well. Sensors used to monitor indoor plant growth have migrated to the field, and field farmers can use the controlled environment of indoor farms as a laboratory for testing different growth recipes for plants. At N.C. State, Hernandez and his colleagues grow young plants indoors where they can be protected from pests and diseases, giving them a head start before transplanting them to fields.

“Vertical farming is just another tool of food production,” says Hernandez. “We need field production, we need indoor production, we need all kinds of production to feed our growing population.”

Expanding that production will require investments in both technologies and skills.

“How do you find engineers who are used to working with plants? Or data scientists who are used to working with plant scientists?” says Lowman of Danville’s Institute for Advanced Learning and Research. “The controls behind these systems are very complex, so they require a unique skill set.”

Cloud-based growing solutions like those offered by Babylon Micro-Farms and Freight Farms allow customers to operate small-scale vertical farms without specialized skills. But as the industry grows, the skills needed to be a commercial farmer are likely to continue evolving.

“It’s hard to predict,” says Lowman, “but I think we’re just barely scraping demand with the amount of vertical farming outfits available now.” **EF**

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# Corporate Taxes Across Borders

Governments across the globe recently reached agreement in principle on measures to counter the tax avoidance strategies of multinational corporations

**M**icrosoft's Irish subsidiary "Microsoft Round Island One" made an astonishing \$315 billion

profit last year — an amount surpassing half of Ireland's GDP. The subsidiary was able to accomplish this without any employees other than its directors. Moreover, it did so without paying any corporate income taxes.

If this sounds like an impressive accomplishment, then welcome to the world of cross-border corporate taxation. Microsoft Round Island One received its income from other Microsoft affiliates, and it avoided paying income taxes due to its hybrid status as a firm registered in Ireland but tax domiciled in Bermuda, which does not levy a corporate income tax. It's just one example of strategies used by multinational corporations to reduce their global tax bills by using technically legal maneuvers that allow them to shift taxable income to affiliates in low-tax jurisdictions.

The details have varied over the years, but the basic idea has remained the same. International tax law allows multinational corporations to place their intellectual property in subsidiaries that reside in low-tax jurisdictions. This move allows a multinational's intellectual property holding subsidiaries to collect royalty fees from the firm's operating subsidiaries that sell goods and services and collect revenue in jurisdictions with relatively high corporate tax rates. The royalty payments serve to shift taxable income away from affiliates in high-tax jurisdictions and toward affiliates in low-tax jurisdictions.

The largest U.S. tech firms have been extremely adept at using sophisticated strategies to reduce their global taxes. Microsoft was one of the early adopters of financial engineering techniques designed to minimize taxes, having begun to establish a complex web of interrelated foreign entities in the 1990s. Since then, tax avoidance strategies have proliferated. U.S. multinationals have drawn the ire of European Union (EU) officials by using

colorfully named strategies — such as the "double Irish with a Dutch sandwich" and the "single malt" — to shift income associated with European sales away from Europe and toward international tax havens. In a similar manner, multinationals have engineered corporate structures that allow them to shift income associated with U.S. sales away from the United States and toward low-tax havens.

The story extends well beyond Microsoft. Amazon, Facebook, Google owner Alphabet, Netflix, and Apple have also been accused of using accounting maneuvers to pay taxes significantly below what they would have otherwise been obligated to pay, based on statutory tax rates.

Recognizing multinationals' ability to shift operations and income across borders, governments across the globe have repeatedly lowered statutory tax rates in a competition to retain and attract corporations as investors and residents. Indeed, statutory tax rates among advanced economies have declined substantially since the 1980s. (See chart.) Economists have mixed

views about the trend. Many see lower corporate income taxes as an unalloyed positive, primarily based on the long-standing argument that the corporate income tax is an inefficient way for governments to raise revenue. In contrast, other economists view the corporate income tax as an indispensable part of the U.S. tax system and believe that the tax cutting trend has become a harmful race to the bottom.

As part of an effort known as the “OECD/G-20 Base Inclusive Framework,” governments around the globe have been working together since 2013 to establish mechanisms for countering multinational income shifting and tax avoidance. Until recently, an agreement appeared elusive, and several countries had acted independently to institute “digital service taxes,” which mainly impact the largest U.S. tech companies. But a breakthrough came recently, when numerous governments agreed in principle to a broad framework designed to curb multinational tax avoidance and stop what many perceive as a race to the bottom.

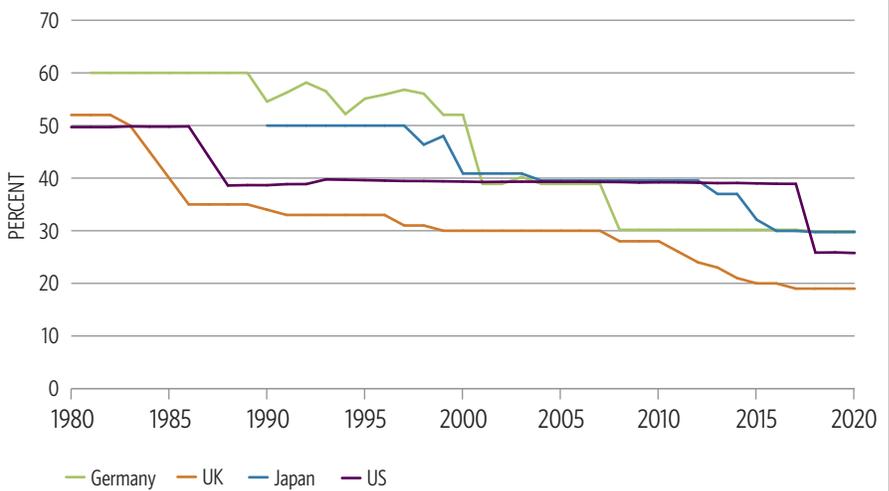
### THE INCENTIVE TO SHIFT

The corporate income tax hinges on the measurement of income. In principle, a corporation’s income should represent a fair estimate of its revenues minus costs during the period under consideration. In practice, earnings are difficult to pin down, even for purely domestic firms. Generally accepted accounting methods can yield estimates that are very different from methods dictated by tax authorities. On top of this, firms sometimes have a great deal of latitude in terms of when they recognize and book certain revenues and costs.

The incentive for multinational firms to shift income among their cross-border affiliates is built into the structure of the U.S. tax code and its relationship to the tax codes of competing foreign jurisdictions. The quantitatively most significant part of the U.S. corporate tax code is its territorial component,

### A Race to the Bottom?

Statutory corporate tax rates (federal plus state or provincial)



SOURCE: Organisation for Economic Co-operation and Development (OECD) Corporate Tax Statistics Database

which is based on the income that corporations earn from their operations on U.S. territory, whether the corporations are headquartered in the United States or abroad. Most advanced economies employ territorial tax systems, but since many countries have lower statutory corporate tax rates than the United States, corporations have an incentive to maximize their after-tax global profits by shifting income to lower-tax territories. The shifting can be done in two mutually compatible ways. A corporation can change its operations by making substantive economic changes such as moving production abroad. But a corporation can also — without necessarily changing its operations — make use of its legal and accounting latitude to shift reported income abroad. (See “Policy Measures and Countermeasures,” an online supplement at <https://bit.ly/corp-tax-policy>.)

Measuring a multinational firm’s territorial U.S. income is not a trivial task. For a firm with foreign affiliates, the calculation of domestic profits requires that the firm assign “transfer prices” to the goods and services that it explicitly or implicitly sells to and buys from the foreign affiliates. Transfer prices are supposed to correspond to prices that unrelated

third parties would pay or receive in the open market. “Even in the most straight-forward cases involving manufactured parts, the arm’s length principle can leave firms some wiggle room,” says Eric Toder, co-director of the Urban-Brookings Tax Policy Center. “But people feel that this works pretty well for goods and services that are not unique and where there is a ready market.” The wiggle room for setting prices and shifting income across borders greatly expands when the service is unique — which is often the case with intellectual property licensing agreements.

In addition to the territory-based tax, the U.S. corporate tax code has a worldwide component that applies to the foreign-sourced income of U.S. resident firms. Until 2017, the foreign income of U.S. resident corporations was taxed at the U.S. statutory rate, but only after the profits were repatriated as dividends to the U.S. parent. In practice, however, U.S. multinationals regularly deferred the repatriation of profits — a practice that created the so-called “lockout” phenomenon of U.S. firms holding an estimated \$2.1 trillion of accumulated profits overseas by 2015.

With the enactment of the Tax Cut and Jobs Act (TCJA) of 2017, U.S. resident firms became subject to a

minimum tax on global income based on a new concept bearing the acronym GILTI, for “Global Intangible Low-Taxed Income.” The GILTI tax applies to what are called the “residual” foreign profits of U.S.-based multinationals — specifically, foreign profits in excess of a “normal” return on foreign invested capital, a hurdle that lawmakers set somewhat arbitrarily at 10 percent.

The vast majority of U.S. corporate tax revenue is raised by the tax code’s territorial component rather than the global component. But this does not mean that the GILTI tax is irrelevant. The U.S. code’s global component works as a disincentive for firms shifting income abroad. “It is not just a lot of noise,” says Toder, “because the idea behind taxing foreign income is really to protect the domestic tax base.” But the protection provided by the global tax has a cost: It arguably provides an incentive for firms to shift their residence abroad.

## TAX AVOIDANCE TRENDS

Since the issue of tax avoidance is often front and center in discussions of corporate tax reform, it may be useful to look at how much U.S. multinationals have actually paid in corporate income taxes. Economists have estimated that, during 2009-2018, publicly traded U.S. multinationals paid over \$2.7 trillion in income taxes to governments globally — which translates into an effective tax rate, or ETR, of roughly 25 percent of their pretax earnings. Some may view the glass as half full because the dollar amount is high. Others may see the glass as half empty because the 25 percent ETR was well below the 39 percent U.S. statutory tax rate during most of the period (for federal and state taxes combined).

Economists have devoted much research to the variation of ETRs across firms and across time. In a 2017 article in the *Journal of Financial Economics*, Scott Dyreng of Duke University, Michelle Hanlon of the

Massachusetts Institute of Technology, Edward Maydew of the University of North Carolina at Chapel Hill, and Jacob Thornock of Brigham Young University found that the ETR for U.S. multinationals trended downward from roughly 34 percent in 1988 to roughly 24 percent in 2012. All of this occurred during a period in which the top U.S. statutory rate remained relatively constant. They found evidence suggesting that the decline was driven partially by U.S. multinationals becoming more global and intangibles based and partially by declining foreign statutory rates (which presumably lowered the effective taxes U.S. multinationals paid on their foreign earnings).

Some of the study’s results are difficult to interpret. Surprisingly, the researchers found a similar downtrend in the ETRs of purely domestic U.S. corporations. Moreover, they found that U.S. multinational corporations consistently had *higher* ETRs than U.S. domestic-only corporations, although the two rates show very similar patterns over time. While this does not contradict the notion that U.S. multinationals increasingly used cross-border income shifting during the period to reduce their taxes, it invites the obvious question: How did domestic-only firms accomplish the task? Economists have looked at various possible explanations, such as the timing of periods when the IRS allowed accelerated write-offs, but there does not appear to be a good explanation so far.

Researchers have uncovered a great deal of statistical evidence about the income shifting behavior of U.S. multinationals. In a 2017 article in the *Journal of Public Economics*, Tim Dowd, Paul Landefeld, and Anne Moore on the staff of Congress’ Joint Committee on Taxation provided further confirmation that such income shifting can be highly responsive to changes in cross-border tax differentials. Moreover, they found that the responsiveness of income shifting was much greater when the tax rates are already quite low. That is, a decline in

a country’s tax rate from 10 percent to 5 percent causes more income shifting into the country than a decline in the country’s tax rate from 30 percent to 25 percent. This result is consistent with income shifting being more sensitive to tax rate changes among tax havens than among those countries with higher tax rates. It suggests that most advanced countries may find it hard to attract corporate income by incrementally lowering their statutory rates.

It is difficult for outsiders to gauge the extent to which multinational income shifting reflects real operational changes that go beyond mere changes in corporate legal structures and accounting ledgers. Standard economic models predict that corporate income tax increases will tend to decrease investment, and the predictions have been confirmed by statistical research. In some cases, however, it appears that plant and equipment have been moved overseas to provide justification for income shifts that were originally accomplished via accounting latitude.

## THE TAX CUTS AND JOBS ACT

The enactment of the TCJA provided economists with something of a real-world experiment about the effects of corporate tax changes. The cut in the U.S. federal government’s territorial tax rate to 21 percent from 35 percent was expected on both theoretical and empirical grounds to stimulate investment in the United States and encourage corporations to shift income back into U.S. territory. Many observers held out hope that investment would also be stimulated by changes in the structure of the U.S. global tax — in particular, the provisions that ended tax deferrals and freed up the deferred profits held by U.S. multinationals’ overseas affiliates.

But the consensus view appears to be that the response of U.S. investment to the new tax law was underwhelming. “In theory, cutting corporate taxes should stimulate investment, but it did

not,” says Dhammika Dharmapala of the University of Chicago Law School. In a 2018 *National Tax Journal* article, he argued that the historical experience suggests that while repatriation holidays and cuts in repatriation taxes can dramatically increase repatriation of cash reserves held in overseas subsidiaries, these flows of cash to the United States have had no detectable effects on U.S. investment or employment levels. He noted that there is evidence that some cash-constrained U.S. multinationals may have responded by increasing their domestic investment. But based on studies of a previous repatriation tax holiday, mandated by the 2004 American Job Creation Act (AJCA), he argued that the general consensus in the literature “is that the primary impact of increased repatriations is an increase in shareholder payout” (in other words, dividends or stock buybacks).

Some analysts have criticized the TCJA’s changes in the U.S. global tax on the basis that they will increase the overall tax burden of U.S. residence. This conclusion appears to hinge on the premise that the GILTI tax will prove to be more burdensome for U.S. multinationals than the previous system of full but indefinitely deferred taxation of foreign earnings. “It may seem on the surface that GILTI is lower,” says Dharmapala. “But most U.S. multinationals did not take advantage of the tax holiday created by the AJCA. We can therefore say that the upper bound on the burden of the deferred tax was about 5 percent, which is the tax rate that they would have paid during the holiday to repatriate profits.”

The case that GILTI increased the global tax burden of U.S. multinationals has been bolstered by event studies that have found that the shift to GILTI caused U.S. multinationals to lose value relative to purely domestic U.S. corporations. According to Dharmapala’s 2018 journal article, “The TCJA increases the tax burden on U.S. residence for many, and perhaps most, U.S. MNCs .. [and will] create substantial distortions to the ownership of assets, both in the United States and around the world.”

### COUNTERING THE “RACE TO THE BOTTOM”

Treasury Secretary Janet Yellen did not mince her words. “We’ve had a global race to the bottom in corporate taxation, and we hope to put an end to that,” she testified at a recent hearing of the House Financial Services Committee. She views the U.S. corporate income tax as an important source of funding for the Biden administration’s planned expenditures on infrastructure investment and social services. Moreover, she sees it as a source of revenue that needs to be bolstered — particularly since U.S. government revenues from corporate income taxes shrunk to just 1 percent of GDP following the enactment of the TCJA, the lowest share since World War II.

The Biden administration, which sees international cooperation as vital to tackling tax avoidance and shoring up corporate tax revenues, achieved early successes in June and July when the G-7, OECD, and G-20 each reached an agreement in principle

on a proposal for a global minimum tax of at least 15 percent. There was also an agreement in principle on a revenue sharing concept that would apply to the “largest and most profitable” companies: At least 20 percent of their profits in excess of a 10 percent hurdle rate should be allocated toward the countries that buy their products and services. This arrangement could upend the traditional perspective that profits should be taxed in the territories where value is created — a standard that has become difficult to apply in cases where production no longer takes place on factory floors.

The global minimum tax would also come in lieu of the digital services taxes that have been imposed on large tech firms by some European countries. Indeed, the framework’s political success in the United States may very well hinge on the removal of these taxes, which many observers see as discriminating against U.S.-based firms.

The path from an agreement in principle to a fully operational global pact is likely to be long and arduous. In the EU, where such agreements require the unanimous assent of member governments, the pact faces opposition from several low-tax countries, including Ireland, Estonia, and Hungary. And in the United States, it faces opposition from those who are against corporate income taxes in any form as well as those who are concerned that the pact would put U.S. multinationals at a disadvantage to the extent that other countries hold out. Eventual success would require policymakers to gain the support of many diverse and competing interest groups. **EF**

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## Ayşegül Şahin

On wage growth, labor's share of income, and the gender unemployment gap

**W**hen she was a college student in Turkey in the 1990s, Ayşegül Şahin (pronounced “ay-she-gul sha-heen”) aspired to be an electrical engineer. But while she was working on her doctorate in electrical and electronics engineering, she sampled an economics course as an elective and found it enthralling. She tried two more economics courses and liked them. Although she had finished all of her Ph.D. coursework by this point, she decided to switch fields. She ultimately won admission to an economics doctoral program in America at the University of Rochester.

“I didn’t really know what I was getting into,” Şahin says. “But I didn’t regret it for a second afterward.”

She quickly gravitated toward studying labor markets. “I found it fascinating that the most important market for most people is the labor market,” she says. “Not all of us own stock, but we all own human capital.”

Today, after a 14-year tenure as a labor market economist in the New York Fed’s research department — she was a vice president by the time she left in 2018 — she is an economics professor at the University of Texas at Austin. She has published widely on labor economics issues such as unemployment and labor force participation, mismatch between skill supply and skill demand, gender differences in labor market outcomes, and entrepreneurship.

David A. Price interviewed Şahin by phone in June 2021.



**EF:** Last year, we saw the first downturn in the labor market since the Great Recession of 2007–2009. How was this recession from the pandemic and the lockdowns different from the Great Recession in how it affected the labor market?

**Şahin:** Well, I was in the New York Fed’s research department during the Great Recession, and when the recession started, I had just begun to brief the Bank’s president and the senior staff on the U.S. labor market regularly. I really lived through the Great Recession at the Fed. What was striking about the Great Recession was its persistence. Everybody kept saying at the time that inflation is around the corner, the labor market is getting tighter, but it took a very long time for the labor market to heal.

We are not seeing that this time. This was a very different shock. It was sharp, but it was transitory compared to the Great Recession. So the effect was great, but the recovery has been faster as well. I think that’s the main difference.

Another big difference is that the Great Recession was a big shock to the construction sector, and we are seeing the opposite now. We’ve been spending more time at our houses and people want to improve their houses and they want bigger houses.

Also, we weren’t really sure what was happening during the Great Recession. Things were being revealed as we went along. But this time, we knew what was happening and we knew the reason, although we didn’t know how it was going to evolve.

But the biggest difference is the persistence. After the Great Recession, it took quits rates five or six years to recover. Today, the quits rate is already back to where it started from before the pandemic hit.

**EF: Why is the quits rate something that you pay attention to?**

**Şahin:** The quits rate is the number of quits during the entire month as a share of total employment. The quits rate was in Janet Yellen's dashboard when she was the chair, actually, so lots of people started paying attention to it.

When the unemployment rate increases, the labor market gets weaker and there are lots of unemployed people who are trying to find jobs. And the U.S. economy is very dynamic: People move from one job to the other, and that's how they improve their match quality.

But when there's a recession, quits go down because people become more risk averse. They don't want to risk unemployment. So if you don't like your boss or you don't like your career, you just say, "OK, I'd better wait a little bit more."

During the Great Recession, this aversion to quitting lasted for a long time. As a result, people were stuck in jobs that they were not necessarily happy about or they were not very productive at. But in this recession, quits rates bounced back quickly. One reason is because there are a lot of job openings; the second is that people want to go back and find jobs that they are better matched at.

**REMOTE WORK**

**EF: Many people are expecting a long-term shift to remote work or hybrid arrangements even after the pandemic has passed. If this happens, what will it mean for labor markets?**

**Şahin:** That would mean, first of all, that we will not have to live where we work. I think that's a big deal. It would affect how people are allocated geographically. They will prefer to live in low-cost states and will prefer to have bigger houses.

This, in turn, could mean the labor market becomes more national and less local, and a greater role for superstar workers, similar to the phenomenon of superstar firms like Amazon that get a great deal of the surplus. For instance, it might be that the best yoga teacher has a Zoom platform, and then

**"I think we might be overestimating how productive remote work will be in the future. If you have a firm where a lot of people haven't met and nobody has in-person interaction, we don't know what the effects on productivity are going to be."**

there would be one million subscribers, instead of having yoga teachers doing this in the studio.

But then on the downside, even though we think we have been very productive working from home, part of that relied on the earlier relationships we had built. We knew our co-workers, most of us, so we were able to switch to remote work and continue as we were doing. Going forward, if we start hiring people who have never met in person, it's not clear how the labor market will work. It's always a different thing when you talk remotely with somebody you've never met than if you met. I think we might be overestimating how productive remote work will be in the future. If you have a firm where a lot of people haven't met and nobody has in-person interaction, we don't know what the effects on productivity are going to be. I think that it's a bit premature to argue that we can all switch to remote work and just duplicate this past year that we thought was very productive.

**EF: The Federal Open Market Committee (FOMC) has said it "will aim to achieve inflation moderately above 2 percent for some time so that inflation averages 2 percent over time and longer-term inflation expectations remain well anchored at**

**2 percent." Do you think wages will keep pace with price inflation during this process?**

**Şahin:** I expect wage growth to pick up. One reason is that we have unemployment insurance benefits in place that help people look for better matches.

They are probably not accepting the first job offer they get; they are able to search a bit longer. That can help them to find better-paying jobs that they are more productive at.

Another component is that some workers might ask for higher wages to be compensated for the health risk that's still out there. The virus health risk, especially for certain age groups or certain workers, is an important issue. They might say, "OK, I'm not going to work 12 hours at \$12 an hour; I need to be compensated for this risk that I'm taking."

**STARTUPS**

**EF: You've pointed out that the startup rate in the United States — that is, the number of new companies as a share of all companies — has been declining since the late 1970s. Why is this important, and what is causing it?**

**Şahin:** Startups are important for various reasons. First of all, they are important areas of job creation and productivity growth. I have worked on this in the last five or six years, and what we have found is that the declining startup rate is a consequence of the declining growth rate of the labor force in the U.S. economy. Because of the baby boom cohort entering the workforce in the 1970s, the labor force grew at a much higher rate — and that's a period when there were more startups in the U.S. economy. Another factor that increased the labor force was the growth of female labor force participation. Both of these factors stabilized in the 1980s, which meant declining labor force growth.

With the declining labor force growth rate, we also started seeing a decline in the startup rate. You can think of the startup rate as the birth rate of firms. What happens when the birth rate goes into decline is that the population gets older after a while. The same thing has happened with U.S. firms.

What does it mean when more firms are older? Older firms are more stable, but they are also slower. They create fewer jobs, which accounts for part of the decline in job creation.

An economy like this is more stable — the unemployment rate tends to be lower — but it also has lower productivity growth. That accounts for a lot of trends we have been seeing in the U.S. economy.

**EF: Does the role of labor supply growth mean that there isn't much room for other policies, such as tax and regulatory policies, to affect the startup rate?**

**Şahin:** There's definitely room for tax and regulatory policy to make a difference. But when you look at different sectors and different locations, as we did — we looked at around 10,000 labor markets — you see a decline in startups in more than 90 percent of them. The point that we are making is that there seems to be a common factor affecting almost all the markets in the U.S. economy. And population growth is such a common factor. Tax and regulatory policies will have to push against the strong demographic trend.

**EF: Reportedly, there's been a pickup in startup formation during this pandemic period. Do you have any thoughts about what's going on there?**

**Şahin:** Well, we have looked at what happens to the startup rate when there is reallocation in the economy. For example, we know that the manufacturing sector declined over time and the service sector grew. But if you look at the startup rate of the manufacturing

## Ayşegül Şahin

### ■ PRESENT POSITION

Richard J. Gonzalez Regents Chair in Economics, University of Texas at Austin

### ■ SELECTED ADDITIONAL AFFILIATIONS

Research Associate, National Bureau of Economic Research; Member, Panel of Economic Advisers, Congressional Budget Office; Member, Technical Advisory Committee, Bureau of Labor Statistics; Co-editor, *American Economic Journal: Macroeconomics*

### ■ EDUCATION

Ph.D. (2002), University of Rochester; M.S. (1996), Bilkent University, Ankara; B.S. (1994), Bilkent University, Ankara

sector in 1980, you could have already predicted that this sector's employment was going to decline over time. That's because its employment share was way higher than its startup employment share. The entry or lack of entry of startups into a sector gives you information about its condition before you see existing firms exiting the sector.

The startup activity that is happening now is another sign of reallocation. Where the startups are entering will be informative in terms of where the economy is going in the near future.

One caveat is that the increase in startups could be a temporary change taking place because these people wanted the freedom to decide how much risk they want to take in terms of health issues. If you work for someone, you have less control over the workplace.

## GENDER AND UNEMPLOYMENT

**EF: Another change since the late 1970s has been the gap between men's and women's unemployment rates. You've said that this gap practically disappeared after 1980 — except that men have higher unemployment than women during recessions. Why are men doing worse**

**than women in terms of unemployment during recessions?**

**Şahin:** I should first qualify that this pattern applies to all recessions except the COVID-19 recession. The reason for the pattern in the earlier recessions is that men are more likely to work in manufacturing and construction, and these sectors are typically the sectors that are affected more by recessions. It's the sectorial allocation of unemployment that accounts for these unemployment differences. At least three-quarters of construction is still men, and women are more likely to be in education and health care, which is not typically as recession sensitive.

In this pandemic recession, one big difference was which sectors were affected. This time, more sectors in which women are more likely to work were affected compared to other recessions. Construction wasn't affected — except for a brief period early in the pandemic — because it's mostly outdoors. So it's really about the recession affecting different sectors differently.

The other change you mentioned is that the gap between men's and women's unemployment rates shrank. That was for a different reason. The reason women's unemployment rate converged with men's is because they became more attached to the labor force.

If you look at 1960, say, or 1970, women took time off every time they got pregnant and had children. This meant that when they had a child, they dropped out of the labor force, and then after a couple of years they wanted to come back in. And this was increasing women's unemployment. It wasn't because of job loss; it was because of labor market interruptions.

And finally, in the 1980s, women started working throughout their pregnancies and stopped taking time off because it was possible to take paid or unpaid maternity leave and keep their positions. As a result, this drop in frictional unemployment came with a decline in women's unemployment rates.

**EF:** Still another change we have seen is that since the 1980s, labor's share of income has been going down. Has automation been an important part of this, and what can we expect for labor's share of income in the future?

**Şahin:** Bart Hobijn, Mike Elsby, and I looked at which sectors had the biggest drops in the labor share. What we saw is that it wasn't really related to decline in capital costs — which you could think about as an indicator of automation; it was mostly related to import penetration. Labor share declined more in sectors that had more import competition.

The way we think about this is that in some sectors, we're really competing with the global labor market. The U.S. started importing a lot of labor-intensive goods, so even if the total labor share in the production process did not change, parts of it did not go to U.S. workers.

We found a lot of evidence for increased competition with the global labor market rather than automation accounting for the decline in the labor share. In the medium run, I expect a partial recovery in the labor share because, as I said before, I expect wages to increase. The labor market is getting even tighter, quits are going up, and workers' bargaining power is better because of the unemployment insurance benefits that have been more generous.

With respect to the long run, it's too early to make any predictions. We don't know how much more import exposure will increase, if it does increase. Automation is surely going to be a factor.

## THINKING ABOUT EARLY CAREERS

**EF:** How should young people today think about their career path? What should they be doing or not doing

if they want a well-paying, secure career?

**Şahin:** I always tell my graduate students and my research assistants that they should be doing what they feel passionate about. The labor market is changing a lot. There is a lot of room



for creativity. Routine jobs are less important now.

I think the definition of a secure career is changing because the economy is moving very fast, but if they do what they feel passionate about, they will always adapt and they will always succeed.

When I was growing up, there was an idea that, "Oh, you should just go into the best major," and that's why I went into electrical engineering, which I did not feel passionate about. But I think it's even more important now to find your passion and invest in that.

**EF:** If a young person doesn't have a strong career direction on the basis of innate interests, or maybe the person is interested in things that don't particularly lead him or her in a career direction, what would be your advice then?

**Şahin:** When we look around, we see a lot of things. The population is aging; we clearly need a lot of support for older people. Life expectancy is increasing, but then it becomes harder and harder to live alone as you get older. In my view, the aging of the population will create demand for some fields.

Also, we need a lot of support for the education of our kids. This is not only about schools; schools do not necessarily provide child care.

So we need a lot of help to take care of children and to help take care of the now growing older population. These are jobs that cannot be automated. This type of job requires a lot of effort, but at the same time, they are really fulfilling jobs. And the need for them will only increase.

And obviously construction is doing well. Even if some things are automated in construction, there are too many details that we cannot really outsource to machines.

**EF:** What would you say has been the high point in your economics career?

**Şahin:** That's not an easy question. But one thing that I am proud of goes back to 2009 and 2010, when the unemployment rate was consistently high. At this point, the main hypothesis was that there's a lot of labor market mismatch. The idea was that we cannot easily make construction workers into nurses, so monetary policy is not going to be effective at addressing high unemployment.

Gianluca Violante, Giorgio Topa, and I acquired online vacancy data from the Conference Board. It was the first time it was used for a project like this. And we were able to come up with measures of labor market mismatch — both skill mismatch and geographic mismatch. We showed that mismatch wasn't that high, and the weakness was due to low demand,

which meant there was still room for monetary policy.

And I presented this at the FOMC in 2011, and time has shown that we were right. As you know, unemployment went down to 3.5 percent before the pandemic recession. I'm proud of this because it was an academic paper used by policymakers, and hopefully it helped unemployed people find jobs. For me, this was a high point in my economics career in terms of research accomplishment.

**EF: Has there been a low point in your economics career?**

**Şahin:** Well, every time we get rejected, it's a low point. (Laughs.)

Probably the lowest point was when I finished my Ph.D. I graduated in 2002, and when I was on the market trying to find a job it was 2001, right after Sept. 11. Everything felt meaningless. I wasn't sure what was going to happen. There was a recession after that, and I wasn't even really thinking about finding a job. That was a very complicated time for me. And it made me think a lot about what I wanted to do.

Living through the 9/11 period while I was trying to find a job, at a time when you really don't want to think about finding a job, made me realize how stressful it is to try to deal with starting a career at a time when there has been a big shock to the economy. It happens to a lot of people.

I ended up finding a job. But that was probably the lowest point for me, and it was also a very low point for all of us.

**"I think the definition of a secure career is changing because the economy is moving very fast. But if they do what they feel passionate about, they will always adapt and they will always succeed."**

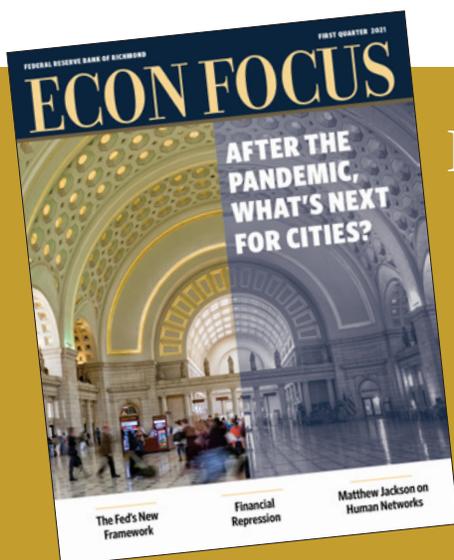
**EF: What are you working on now?**

**Şahin:** I'm working on trying to understand the gender wage gap with my co-authors Jason Faberman and Andi Mueller. We talked about the fact that unemployment rates by gender converged, so there's no gap in terms of the unemployment rate; if anything, women have typically done better than men when there is

a recessionary shock, except during the COVID-19 recession. But even now, the female unemployment rate is lower than the male unemployment rate. What I'm trying to understand is whether the job search process is actually accounting for some of the gap that is left between men and women — the wage gap.

Even though we don't have a gap in the unemployment rate, we still see that women are paid less than men who are very similar to them in terms of their observables. When you look within occupations and within locations at men and women who are similarly aged with similar education, women still get paid less. I think we need to understand why this is happening. So I'm

trying to understand whether there is something about how women move from one job to the other, how they search for jobs, how they acquire them, whether they prefer non-wage amenities to wages, or whether men are more motivated by pay than other aspects of the job. I think at this point in the debate on inequality, we really need to understand this gap between men and women in a more detailed way. **EF**



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BY HAILEY PHELPS

## When Interstates Paved the Way

The construction of the Interstate Highway System helped to develop the U.S. economy

In 1939, the New York World's Fair offered attendees a time traveling look at the "World of Tomorrow." In the General Motors Futurama exhibit, visitors toured an enormous scale model of what a city would look like in 1960. Futurama simulated a low-flying airplane journey; the 18-minute ride gave guests a bird's-eye view of 36,000 square feet of miniatures, including more than 500,000 buildings, 1 million trees of 13 different species, and nearly 50,000 motor vehicles. Probably the most advanced technology in the diorama was the remote-controlled 14-lane multispeed interstate highway system, which introduced the general American public to the concept of a network of expressways connecting the nation. Today, there are several interstate highways in the United States that boast 14 or more lanes. But these mega highways were not built overnight; it took many years of work to receive congressional approval and decades more to construct the network that millions of Americans travel on every day. The improved mobility that the interstate highway system provides has done more than make road trips easier — it has contributed to the growth of the U.S. economy.

### FROM DIRT TO PAVEMENT

In the early 20th century, Henry Ford and his assembly line made the Model T car affordable to working-class citizens, which increased mobility exponentially. As cars became more accessible, there was an increased need for greater funding for car-friendly roads. In the 19th century, most roads were constructed for horses and wagons out of dirt or gravel and generally used to travel short distances. To accommodate the Model T craze and meet the demand for better roads, Congress passed the Federal-Aid Road Act in 1916, which granted \$75 million to states for road construction and improvement. It was the first legislation that provided federal aid to the states for their highways. But most states' road construction projects were delayed or slowed in 1917 as labor and capital were shifted to help the war effort, leaving few resources available for other projects. By the end of World War I, only five federal-aid projects had been completed, totaling just 17.6 miles of road.

Railroads were initially the primary method of shipping freight, consumer goods, and people across states. The increased number of shipments required by the war, however, caused the railroads to become congested. One solution to this problem was to ship some of the cargo on trucks. So interstate transportation of freight by truck

became essential, yet interstate roads were still primarily made of dirt, and the trucks caused substantial damage to them. For example, according to the U.S. Federal Highway Administration (FHWA), roads in New York that cost \$11,000 per mile to build in 1912 were estimated to cost \$32,000 per mile to repair at inflated 1918 costs. Despite these costs, it soon became evident that the cost savings of shipping by truck outweighed the costs of repairing roads.

During the Great Depression, the Public Works Administration, part of President Franklin D. Roosevelt's New Deal program, advanced national road construction, created jobs, and improved the economy by building thousands of miles of roads. These roads were part of the U.S. Numbered Highway System, a paved network of two-lane roads, carrying a U.S. route number that crisscrossed the United States. One of the most famous highways constructed during this time was U.S. Route 66, a 2,448-mile stretch of road that linked Chicago to California. In addition to bringing farm workers to California from the Midwest, many Americans enjoyed driving on Route 66 simply for the sake of traveling and seeing the sights along the way.

As passenger and truck traffic on the U.S. highway system grew, however, it became apparent that these roads were beset with deficiencies of design, efficiency, location, and safety. And there was an increased interest in an upgraded interstate network. In 1939, around the time of the world's fair, Roosevelt addressed Congress with a call to action for the development of "a special system of direct interregional highways ... to meet the requirements of the national defense and the needs of peacetime traffic." But following the attack on Pearl Harbor in December 1941, the United States entered World War II, and plans for a national highway system were mostly delayed.

Following World War II, the need for efficient transportation networks became a priority again as the United States emerged as a world leader in goods production. To jumpstart this process, Roosevelt signed the Federal-Aid Highway Act of 1944, authorizing a 40,000-mile national system of interstate highways. Budget legislation did not provide any funding programs for building such a system, however, so development of the interstates would have to wait.

### LAUNCHING A NEW PROGRAM

The development of the interstate highway system as we know it today can be attributed to President Dwight D. Eisenhower. As a military officer during World War II, he

was impressed by the German autobahns and wanted a similar highway system for the United States. When he became president in 1953, he revived interest in constructing a national interstate system. On June 29, 1956, Eisenhower signed the \$25 billion Federal Aid-Highway Act of 1956, sanctioning a highway system (later named the Dwight D. Eisenhower System of Interstate and Defense Highways) of 41,000 miles of highways, with strict standards, including nearly 2,000 miles of already-completed toll roads, with the goal of being completed by 1975. In 1968, Congress increased the total length to 42,500 miles.

The interstate system was initially designed to serve three main purposes: to connect the principal metropolitan areas, cities, and industrial centers; to serve the national defense; and to connect at suitable border points with routes in Canada and Mexico. Eisenhower additionally stated four key principles of its construction, which remain to this day: to reduce fatalities and injuries; to keep the roads maintained and in good condition to reduce vehicle operating costs; to permit a means of quick evacuation, military mobilization, and movement of goods; and to manage congestion.

To raise money for the construction of roads on a national scale, Congress created the Highway Trust Fund, which funded 90 percent of construction costs. This fund generated revenue through federally imposed user fees on motor fuels, increasing the price of a gallon of gasoline by one cent. States would pay the remaining 10 percent. By the summer of 1957, most states had begun construction of their segments of the interstate system. Today, more than 46,700 miles of interstate highways are open to traffic. The Dwight D. Eisenhower System of Interstate and Defense Highways serves most large U.S. urban areas and 49 of the 50 states, all but Alaska.

Up until 1956, most Americans viewed a national highway system favorably. When the bulldozers came in 1957 and 1958, however, some urban residents questioned how well big highways and big cities mixed. In 1959, San Franciscans staged the first large-scale rejection of urban freeway planning in the United States, known as the “freeway revolt,” a series of protests and petitions. As a result, the San Francisco Board of Supervisors halted further freeway construction, leaving the Embarcadero Freeway and most of the planned freeway network permanently unfinished. In the following years, negative reactions to freeway construction increased, and there were anti-freeway protests in over 50 cities. Oftentimes, these revolts pitted city residents, who



Interstate 81 under construction in Botetourt County, Va., in June 1964.

cared about the local quality of life, against city planners, who saw interstates as a key to growth.

In a recent working paper, Philadelphia Fed economists Jeffrey Brinkman and Jeffrey Lin found evidence that these revolts were inspired by the diminished quality of life from freeway side effects such as noise and pollution. Additionally, they showed that downtown neighborhoods closer to newly opened freeways exhibited less growth in population and income than neighborhoods farther away from the freeways. They concluded that freeways likely played a significant role in the decentralization of U.S. cities.

## INTERSTATES AND THE ECONOMIC ENGINE

As the miles of constructed interstate increased, so did the movement of freight and people. The interstate connected people and places throughout the country to rail yards, marine ports, and airports, improving economic efficiency and productivity. Hard-to-travel areas, such as mountainous regions, became accessible and this opened up east-west travel and transport, directly adding to the economic development of those regions. In rural areas, the interstate highway system made less expensive land more accessible and encouraged development in places that had experienced limited economic growth prior to being connected to a larger system. A 2019 study by Taylor Jaworski and Sergey Nigai of the University of Colorado Boulder and Carl Kitchens of Florida State University found that the construction of the Appalachian Development Highway System, a system of state, U.S., and interstate routes in the Appalachia region, led to national economic gains of nearly \$54 billion (\$22 billion in the Appalachia region) and boosted incomes in that region by reducing the costs of trade.

Productivity in the United States has increased since the development of the interstate highway system, and there is evidence that the interstates are one reason why. According to research by the FHWA, “From 1950 to 1989, approximately one-quarter of the nation’s productivity increase is attributable to increased investment in the highway system.” By improving transportation between regions, the interstate highway system has helped to expand the national market for goods as firms can supply their products to much larger geographical areas at lower costs.

Other research has examined the effect that interstates have had on domestic and international trade costs. In a recent NBER working paper, Jaworski, Kitchens, and Nigai found that removing the interstate highway system would reduce real GDP by \$619.1 billion (3.9 percent), and that 25 percent of that loss would result from reduced international market access. Additionally, they quantified the value of each of the 20 longest interstates; two of the most valuable cross the Fifth District, namely I-40 and I-95.

“These transnational routes are important because they connect the most cities and the most major markets to one another,” says Kitchens. “The routes that are important are not only those that are transnational, but also those that connect ports. Because of this, I-5 [which runs from Canada to Mexico on the West Coast] and I-95 are extremely valuable.”

One reason that I-95 is one of the most valuable segments of the interstate highway system is that it is connected to the Port of Savannah, Ga., otherwise known as “The Quiet Giant.” Twenty-five thousand tons of cargo are transported through this port every day, making it the fourth busiest in the nation. Between 7,000 to 9,000 trucks enter and leave this port daily with goods on their way to retail stores across the Southeast, Midwest, and Gulf Coast, 80 percent of which are distributed on I-95.

When Eisenhower pitched the interstate system to Congress, he justified the cost of the project as a national security measure, but he knew the real value of the investment was the effect it would have on the U.S. economy in the short and long run. Dissertational research by Daniel Leff Yaffe of the University of California, San Diego estimates that the output effects of building the interstate highway system has had a long-run relative multiplier of 1.8, meaning that every dollar spent on interstates has led to \$1.80 of additional economic output. In 1991, one year before its completion, the FHWA issued the final cost estimate of the interstate system at \$128.9 billion, over five times the original estimated cost in 1959 — \$27 billion — adjusted for inflation. Assuming the long-run multiplier is 1.8, the interstate highway system has generated over \$283 billion in additional economic output.

Since the interstate highway system was completed in 1992, the federal government has continued to provide funding for interstates to states through a series of grant



President Dwight D. Eisenhower opens an extension to the George Washington Memorial Parkway in November 1959.

programs collectively known as the Federal-Aid Highway Program. Research published in NBER *Macroeconomics Annual* by San Francisco Fed Economists Sylvain Leduc and Daniel Wilson examined current federal public infrastructure investment and found that federal highway grants given to states boost economic activity in the short and medium term. Overall, each dollar of current federal highway grants received by a state raises that state’s annual economic output by at least \$2.

### TAPPING THE BRAKES

Today, as in the 1950s, the interstate system has critics. For example, some people are calling for the “defederalization” of the transportation system to change the incentives created by its current top-down, federally driven decision-making. In a 2017 working paper, Santiago Pinto, a Richmond Fed economist, examined the economic implications of shifting from an institutional arrangement in which transportation decisions are made in a centralized way to one that gives a larger role to local or regional agencies. He found that in a decentralized arrangement, local transport authorities tend to overinvest in transportation that connects the city’s residential areas to local employment centers — compared to a centralized system — but tend to underinvest in transportation that connects cities to one another.

A handful of defederalized transportation authorities, including the Chicago Transit Authority in Illinois, the Metropolitan Transportation Authority in New York, and the Jacksonville Transportation Authority in Florida, exemplify Pinto’s model of a decentralized transportation authority. “An important contribution of these agencies is that transportation decisions would tend to be coordinated among participants, so they would internalize their impact on the local areas,” he says.

Another consequence of the interstate was that many small towns, centered around old state roads and U.S. routes, were left in the dust after the construction of larger interstate roads. These small towns suffered financially after the

construction of the interstate because people were able to bypass these towns in favor of the faster route of transportation. One example of a small town negatively affected by the interstate is Peach Springs, Ariz. In the 1880s, Peach Springs was built as a watering station for steam locomotives. The railroad necessitated the construction of train facilities, housing for railroad workers, a terminal, and a hotel. During the next few years, the town's several businesses catered to travelers and railroad workers. Additionally, Peach Springs advertised itself as the first gateway to the Grand Canyon to attract tourism dollars. When Route 66 was built, Peach Springs prospered and built motels, diners, and gas stations to attract travelers. But when I-40 was built in the 1960s and 1970s, it bypassed Peach Springs entirely. Of the 32 active businesses in Peach Springs before the bypass in 1978, only two businesses remain in the town today: a grocery store and a motel.

The development of the interstate highway system led to economic growth, but it has had mixed results for the quality of life for the people who use it. Some argue the time savings from reduced commuting times has translated into additional time for preferred activities. On the other hand, some argue that the time savings from using interstates are reduced or eliminated because of induced traffic from induced highway demand — that is, increasing the supply or quantity of roads makes people want to use them more. Research published in the *American Economic Review* by Gilles Duranton of the University of Pennsylvania and Matthew Turner of Brown University examined the effect of lane kilometers of roads on vehicle-kilometers traveled (VKT) in U.S. cities. They found that VKT increases proportionately to roadway lane kilometers for interstate highways, and that the sources for this extra VKT are increases in driving by current residents, increases in commercial traffic, and migration. “The provision of roads essentially does nothing for congestion,” Duranton explains. “When new roads are built, they fill up very quickly, and travel conditions do not change.”

In some respects, the construction of the interstate has played a positive role in U.S. urban areas, despite initially being excluded from early stages of interstate planning. The interstate highways increase mobility in urban areas by reducing travel times for cars, buses, and trucks, while lessening traffic congestion on noninterstate roads. The addition of the interstate also allowed cities to expand their

physical size. “In a world where people can only walk or ride a horse, cities cannot be very big, but in a world with widely available transit and cars, cities can grow a lot bigger,” says Duranton.

The interstate connected suburban and rural communities to city centers, but it divided and destroyed urban neighborhoods, particularly in minority communities. For example, within the Fifth District, neighborhoods in Southwest Washington, D.C., were sacrificed to construct I-395, forcing those residents to move to other areas. In an article published in 2007 in the *Quarterly Journal of Economics*, Nathaniel Baum-Snow of the University of Toronto's Rotman School of Management studied the effects of interstate highway construction on population in central cities. His results showed that between 1950 and 1990, the population of U.S. central cities in the United States declined by 17 percent, on average, despite the overall population growth of 72 percent in metropolitan areas. His model estimated an 18 percent population reduction for each addition of a new highway through a central city. His findings showed that if the interstate highway system had not been built, central city populations would have grown by about 8 percent, on average, implying highways played a substantial role in the suburbanization in the United States.

Today, many cities are reconsidering highway policies that pushed elevated interstate highways through central cities and caused damage to housing, businesses, and neighborhoods. Since the 1970s, at least two dozen U.S. cities have contemplated removing central-city elevated expressways. So far, a few cities have successfully removed or modified such highways: Boston replaced its Central Artery with a network of tunnels, known as the Big Dig; New York's West Side Highway is now a street-level boulevard; and Harbor Drive in Portland, Ore., is now a waterfront park.

## CONCLUSION

In the 65 years since the creation of the interstate highway system in the United States, the growth of the economy and the quality of life and mobility of Americans has substantially increased. Yet the future has turned out to be more complicated than the one presented by Futurama; the transportation arteries presented in miniature in 1939 have delivered challenges as well as benefits after being brought to life. **EF**

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BY DAVID A. PRICE

## The Economist as Consultant

Nearly two-thirds of academic economists have taken on work as paid consultants at some point in their careers — and two in five have done so within the past five years. There’s an image popular in some quarters of economist consultants cashing in with six-figure paydays for the sake of funding their beach houses, their children’s private school tuition, and their skiing vacations in Gstaad. That probably does happen here and there, but survey evidence collected by economists Alison Del Rossi of St. Lawrence University and Joni Hersch of Vanderbilt Law School from more than 1,200 economists paints a quite different picture of how much money they make from consulting and why they consult.

Much economics consulting takes place in the context of litigation: An economist is paid to write an expert report in support of a litigant’s position on an economic issue and perhaps also to answer questions in a deposition or to testify. In Del Rossi and Hersch’s findings, published in 2020 in the journal *Economic Inquiry*, the types of consulting issues that economists reported they had worked on reflected this. Most heavily represented were labor and employment issues — 44.4 percent of respondents said they had consulted on such issues — followed by regulation (29 percent), personal injury (27.5 percent), energy or environmental issues (27 percent), and antitrust (25 percent).

Among economists who consult, their average hourly rate is \$267. Male economists have commanded more, at \$284 per hour compared to \$221 for female economists. Part of the reason, says Hersch, may be that consulting rates aren’t publicized within economics associations or elsewhere. “If you’re in the minority as a woman in an economics department, the way networks tend to form, it would be hard to get information on what other people are paid,” she says.

For the hypothetical economist who consulted full time, the \$267 hourly average would work out to more than \$500,000 per year. But of course, an academic economist who consulted full time wouldn’t be an academic economist. In reality, for those who had consulted, consulting work made up an average of just 9 percent of their earnings over the past five years.

Not only does consulting tend to make up a minor part of economists’ incomes, it comes with significant negatives, in Del Rossi’s and Hersch’s experiences. Del Rossi says she found that “there was little flexibility about when the work had to be done,” which made it “stressful” to fit in with other work responsibilities. Many survey respondents also cited the stressfulness of the process. (See table.)

Hersch, in her experience, found it “annoying” to wade through “spurious” objections of the other side. In a case

### Most Academic Economists Are Open to Consulting

Willingness to consult in future (percent)	
Yes	54.6
Maybe	33.8
No	11.6
Reasons not willing to consult in future (percent)	
No interest	59.1
No time	56.7
Too much travel	7.1
Unpredictable deadlines	9.5
Too stressful	15.8
Stress of trial	4.7
Lack self-confidence	10.2
Not enough experience	9.5
Fields/expertise not match	26.8
Dislike of the adversarial process	13.4
Ethical concerns	18.9
Do not need the money	49.6

SOURCE: Alison F. Del Rossi and Joni Hersch, “Gender and the Consulting Academic Economist,” *Economic Inquiry*, July 2020, vol. 58, no. 3, pp. 1200–1216.

involving an alleged wrongful termination, she recalls, opposing counsel “argued that I needed tens of thousands of observations in order for a regression to be valid. How do you even answer a statement that stupid?”

Still, there are nonmonetary benefits to consulting. Among the benefits frequently cited by respondents to the survey were making a social contribution, obtaining access to data, encountering new research questions, and gaining material — war stories — for teaching. “Consulting questions make great teaching examples,” Hersch says. (For research that arises from consulting work, or which simply relates to the interests of a former consulting client, many economics journals require disclosure of the client relationship.)

Hersch recommends that junior faculty refrain from consulting, on the ground that their time is better spent elsewhere. But she says she favors “limited amounts after you get tenure, because it does have value to your teaching and to your research possibilities.”

“And I’m not ruling out money,” she adds. “We are economists, of course.” EF

BY HAILEY PHELPS

# Child Care Legislation During COVID-19

In early 2020, many business owners had their world turned upside down as COVID-19 restrictions forced them to close. Among them was Cynthia Farris-Lynch, who runs a home child care center in Virginia. “I try not to think about the future because it’s terrifying,” she told the *Virginia Mercury* last September. “I’m 76 years old and I’ve been doing this for 52 years — this is my livelihood.” She was not alone among child care providers: More than 2,000 child care centers in Virginia have closed at least temporarily since March 2020.

“The pandemic, much like many other things, has exposed long-standing issues in child care,” says Erika Bell, a community development regional manager at the Richmond Fed.

Even before the coronavirus crisis, families struggled to find affordable child care options. Child care workers made an average of only \$12.24 per hour or \$25,000 a year, which is less than the federal poverty level of \$26,500 for a family of four. And child care programs ran on razor-thin profit margins and high staff turnover rates. To comply with COVID-19 guidelines, child care centers were subjected to increased operating costs as well as decreased enrollment, contributing to losses in revenue. As a result, many child care programs were forced to shut down.

One consequence has been the widening of a child care gap: Currently, the potential child care need is greater than the number of spots available in legally operated and state-recognized providers, including home-based child care and license-exempt child care. Within the Fifth District, Bell found that there are over 1.4 million children who need child care, but only approximately 847,000 spots were available

prior to the pandemic. Since then, the gap between demand for child care and availability has widened. “As people return to work, child care facilities are reopening but with fewer spots,” says Bell.

To help the struggling child care industry and make child care more accessible, Congress passed the largest-ever program of support for American child care in the American Rescue Plan Act in March 2021, distributing \$39 billion (over \$3.6 billion in the Fifth District) to the child care industry. Nearly \$15 billion of the \$39 billion has gone to the Child Care and Development Block Grant, which subsidizes child care costs for low-income families. The remaining \$24 billion has been allocated to a new state-administered stabilization fund for eligible child care providers, which can be used to cover a range of expenses, including personnel costs, rent, facility maintenance/improvements, and personal protective equipment. A recent brief from the Fed’s Early Care and Education Workgroup explores considerations for deploying these funds.

President Biden, in his first address to the joint houses of Congress on April 28, 2021, proposed further federal assistance for child care through the American Families Plan. This \$1.8 trillion proposal includes \$225 billion toward the expansion of affordable, accessible, and high-quality child care to support families and child care workers. Under the proposal, low- and middle-income families making up to 1.5 times the state’s median income would pay no more than 7 percent of their income for children under 5. Biden’s plan takes steps to improve the quality of child care by covering the costs of creating developmentally appropriate curricula, decreasing

class sizes, and facilitating culturally and linguistically inclusive learning environments. Additionally, Biden’s proposal aims to increase the pay of the child care workforce by mandating a \$15 minimum wage for child care employees. The Biden administration argues that the American Families Plan will significantly strengthen “inclusive and equitable economic growth” by enabling more parents to join the labor force and better preparing the future labor force.

Republican members of Congress have criticized Biden’s plan for its spending and for expanding the government’s role too much. “They want to make sure that any federal spending is supported by outcomes,” says Sam Louis Taylor, a Richmond Fed public policy analyst. They are also concerned that paying child care workers more may decrease affordability and worsen profit margins, while child care advocates say that increasing funding for child care providers and subsidizing child care for families will likely alleviate such effects.

To pay for the plan, the Biden administration has proposed raising the top marginal tax rate, increasing capital gains taxes, raising the corporate tax rate, and providing the IRS with more resources, though the future timeline of the proposal is unknown. “The need for improving access and supporting the child care industry is there,” says Taylor. “In this case, it’s more of a matter of the size of help, what the need really is, and how much both parties are willing to spend on it.”

And child care isn’t the only issue, Taylor adds. “Having schools open, with high educational quality, is important, too.” **EF**

# DISTRICT DIGEST

BY STEPHANIE NORRIS AND SONYA RAVINDRANATH WADDELL

## What Difference Does a Minimum Wage Make?

### The minimum wage and the Fifth District

In 1938, in the wake of the Great Depression, the Fair Labor Standards Act (FLSA) established the first federal minimum wage of 25 cents per hour. At that time, a limited number of states had minimum wage requirements, and even the 1938 act applied primarily to companies involved in interstate commerce or producing goods for interstate commerce. The most recent change in the federal minimum wage rate, enacted in 2007, raised the hourly rate from \$5.15 to \$7.25 by July 2009. But changes to minimum wage laws are neither consistent across states nor uncontroversial among economists. Many states, including some in the Fifth District, have enacted legislation in the last year to increase the minimum wage, and those increases will have both direct and indirect effects on workers, households, and businesses in the District. This article outlines both who will be affected and what those effects could be.

#### THE FIFTH DISTRICT AND ITS MINIMUM WAGES

State legislatures across the country have implemented their own minimum wages, and the number of states whose minimum wage exceeds the federal level has increased in the last decade. In January 2010, 13 states and the District of Columbia had minimum wage rates above the federal level; by July 1, 2021, 30 states had higher minimum wage rates, with the highest in Washington state (\$13.69). As in the nation, minimum wage laws vary across Fifth District jurisdictions. The District of Columbia increased its minimum wage from \$15 to \$15.20 on July 1, 2021, while recent legislation in Maryland and Virginia committed to steadily increase the minimum wage

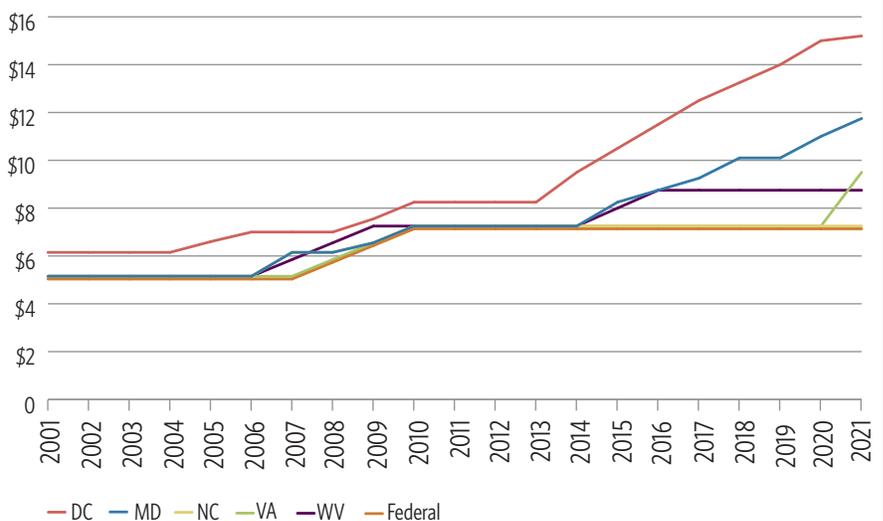
over the next few years. West Virginia's minimum wage went from \$8 to \$8.75 in 2015. In the District, only South Carolina has no minimum wage law, but in effect, North Carolina has also ceded control to the federal government by setting its state's minimum to the federal level. (See chart.) More state-level increases in the Fifth District are slated. (See table on next page.)

As in federal minimum wage legislation, states can write occupational and industry exceptions, as well as accommodations for very small businesses, into their minimum wage requirements. In some states, localities can set local minimum wage rates that exceed the state and federal minimums. For example, in Maryland, Montgomery County (and until recently, Prince George's County) instituted a minimum wage above both the state and federal

minimums. But local minimum wages are more the exception than the rule in the Fifth District: Court rulings and state laws in Virginia, North Carolina, and South Carolina prevent localities from setting their own minimum wage rates. In West Virginia, although no legislation prohibits localities from mandating higher minimum wages, no locality has ever implemented a higher minimum.

There are a number of reasons why states or localities might adopt their own minimum wage. First, the FLSA does not index the minimum wage to inflation. In fact, the buying power of the federal minimum wage peaked in 1968 when it was \$1.60, which equates to \$11.90 in 2020 dollars. Some states and localities across the country, including in the Fifth District, have indexed minimum wage increases

State-Level Minimum Wages in Fifth District Jurisdictions



NOTE: Rate changes are effective January of each year, with the exception of 2021 (rates are effective as of July 1). South Carolina has no state minimum wage law.  
SOURCES: State Minimum Wage History, U.S. Department of Labor, Wage and Hour Division via FRED; State Minimum Wage Laws, U.S. Department of Labor, Wage and Hour Division

### Minimum Wage Increases in the Fifth District

	2021 Minimum Wage	2020 Minimum Wage	Scheduled Increases	
			Set Rate Increases	Inflation Indexing
<b>District of Columbia</b>	\$15.20 <sup>1</sup>	\$15.00 <sup>2</sup>	None <sup>3</sup>	Annual indexing based on CPI-U (DC metro average) starting July 1, 2021
<b>Maryland</b>	\$11.75	\$11.00	January 1, 2022: \$12.50 <sup>4</sup> January 1, 2023: \$13.25 January 1, 2024: \$14.00 January 1, 2025: \$15.00	None
<b>South Carolina</b>	\$7.25 <sup>5</sup>	\$7.25	None	
<b>North Carolina</b>	\$7.25	\$7.25	None	
<b>Virginia</b>	\$9.50 <sup>6</sup>	\$7.25	January 1, 2022: \$11.00 January 1, 2023: \$12.00 January 1, 2025: \$13.50 January 1, 2026: \$15.00	Annual indexing to CPI-U (US City average) begins January 1, 2027
<b>West Virginia</b>	\$8.75	\$8.75	None	

SOURCES: U.S. Department of Labor State Minimum Wage Laws; EPI Minimum Wage Tracker; Code of the District of Columbia; Maryland Department of Labor; Code of Virginia; West Virginia Division of Labor.

<sup>1</sup> Effective July 1.

<sup>2</sup> Effective July 1, 2020; previously \$14.

<sup>3</sup> If the federal minimum wage increases above the D.C. rate, the D.C. rate will increase to \$1 above the federal minimum.

<sup>4</sup> Stepwise increases for employers with <15 employees begin in 2022 with an increase to \$12.20 and completes in January 2026 at \$15.

<sup>5</sup> South Carolina has no state minimum wage; federal limit applies. North Carolina's state minimum wage is set to equal the federal FLSA rate.

<sup>6</sup> Effective May 1.

to a consumer price index to account for future price increases. Second, the federal minimum wage does not account for regional variations in the cost of living, which states can address through higher state minimums and by allowing local minimum wage rates above state requirements. Third, setting their own legislation can enable states to fine-tune their minimum wages, for example, by setting separate stepwise increases for small businesses.

#### EFFECTS OF A MINIMUM WAGE INCREASE

When trying to assess the potential impact of an increased minimum wage, the first step is to understand which workers are likely to be affected. In a 2019 article in the *Quarterly Journal of Economics*, Doruk Cengiz of the firm OMP and co-authors estimated employment and wage changes in

reaction to 138 state-level minimum wage increases between 1979 and 2016. They found that spillovers in wage increases extend up to \$3 above the minimum wage and represent around 40 percent of the overall wage increase from minimum wage changes. (They calculated a 6.8 percent increase in the average wages of affected workers.) In a February 2021 NBER working paper, Orley Ashenfelter of Princeton University and Štěpán Jurajda of the Center for Economic Research and Graduate Education - Economics Institute used price and wage data from McDonald's restaurants to find a strong relationship between the increase in the minimum wage and increase in restaurant wages. Although much of the wage increase was among workers near the effective minimum wage level, many restaurants sought to preserve their pay premium and thus increased wages regardless of whether

the minimum wage was binding — that is, whether the minimum was higher than what their workers were already receiving.

Cengiz and his co-authors found that the benefits of wage spillovers accrue only to those who had a job before the minimum wage increase and not to new entrants. They argued that the spillovers were generated from concerns about relative pay — firms bumping up the pay of workers who were just above the minimum wage in order to preserve pay differentials within the firm — and not from the fact that the higher wage floor enticed nonemployed workers to take a job.

On one hand, if the minimum wage rises above a nonemployed worker's reservation wage (that is, the lowest wage at which a worker is willing to work), he or she will take a job. On the other hand, the rise in the minimum wage, or even the discussion of

a possible minimum wage hike, could itself result in an increase in workers' reservation wages. The economy seems to be experiencing such an increase in reservation wages today — not just as a result of the \$15 minimum wage discussion, but also as the result of a pandemic that had a disproportionately large impact on our lowest wage workers. (See “Do Employees Expect More Now?” p. 1.)

More controversial than the relationship between the minimum wage and average wages is the effect of an increase in the minimum wage on employment — at least using the minimum wage increases that have been observed in the United States. Economic theory from Econ 101 would imply that if the minimum wage acts as a price floor in a competitive labor market, then enacting a minimum wage will reduce labor demand and thus reduce employment. The evidence of an employment decline after a minimum wage increase, however, has been mixed. Broadly, the literature suggests limited aggregate employment effects but a negative employment effect for workers earning at or below the minimum wage prior to the increase. In their 2019 article, Cengiz and his co-authors found that an average minimum wage hike led to a large and statistically significant decrease in the number of jobs below the minimum wage in the five years after the minimum wage was implemented or changed. Those lost jobs were almost entirely offset by an increase in the number of jobs at or slightly above the minimum wage. This is what economists call a labor-labor substitution at the lower end of the wage distribution. The researchers found no indication of significant employment changes in the upper part of the wage distribution.

In a 2021 review of some of the literature, David Neumark of the University of California, Irvine and Peter Shirley of the West Virginia Legislature reported that 55.4 percent of the papers that they examined found employment effects that were negative and

significant. They argued that the literature provides particularly compelling evidence for negative employment effects of an increased minimum wage for teens, young adults, the less educated, and the directly affected workers. On the other hand, in a 2021 *Journal of Economic Perspectives* article that analyzed the effect of the minimum wage on teens ages 16-19, Alan Manning of the London School of Economics and Political Science wrote that although the wage effect was sizable and robust, the employment effect was neither as easy to find nor consistent across estimations.

Thus, although the literature supports an effect on employment among the most affected workers, it does not appear to be as sizable as theory might suggest. But how else do employers respond to a forced increase in the cost of labor? For one, they could pass the cost increase along to customers — and there is some evidence for that. In a 2018 *ILR Review* article, Sylvia Allegretto and Michael Reich of the University of California, Berkeley found that minimum wage increases are largely absorbed by price increases. Daniel Cooper and María José Luengo-Prado of the Boston Fed and Jonathan Parker of the Massachusetts Institute of Technology concluded much the same in a 2020 article in the *Journal of Money, Credit, and Banking*.

There are other ways that employers could absorb the increased wage. For one, employers could cut nonwage compensation, such as health care benefits or vacation time. Alternatively, if raising wages lowers turnover among firms, they might find that labor costs increase substantially less than the increased wage would suggest — thus accounting for the smaller employment effect. Firms might also turn to automation in the face of rising labor costs.

Another possibility is that firms do not operate in a perfectly competitive labor market. For example, firms might have monopsony power, where a firm is the price-setter of wages rather than the price-taker. (See “Raise the

Wage?” *Econ Focus*, Third Quarter 2014.) In this model, the employer faces an increasing marginal cost per worker and thus will underpay and underemploy given the productivity of the workforce; by setting a minimum wage above what the monopsonist chooses, the government imposes a constant marginal cost per worker, thus leading the firm to both employ and pay more.

## WHO ARE THE MINIMUM WAGE WORKERS?

The complex and regional nature of minimum wage legislation makes it more complicated than one would think to understand exactly which workers are affected by minimum wage legislation. Roughly 139 million employees, or 85 percent of the U.S. workforce, qualify for FLSA protections. Employees in certain occupations and industries (for instance, individuals elected to state and local offices and their staffs) are not covered by the FLSA. Even for those who qualify for FLSA coverage, there are exemptions to the minimum wage requirement for some employees (for instance, employees in some computer-related occupations who pass salary and duties tests) and subminimum wage provisions for workers including new hires under age 20, full-time students, employees with disabilities, and tipped workers.

Nationwide, the share of U.S. workers earning at or below the minimum wage is small. According to the Bureau of Labor Statistics *Characteristics of Minimum Wage Workers* report, in 2020, 55.5 percent of all wage and salaried workers, or 73.3 million workers ages 16 and older, were paid hourly. Of these workers, 1.5 percent reported earning at or below the federal minimum wage in 2020, compared to 13.4 percent in 1979. According to the same report, in the Fifth District, the share of hourly workers at or below the federal minimum ranged from 1.8 percent in the District of Columbia and North Carolina to 4.4 percent in South Carolina. This can, of course, vary notably by age

### Workers Affected by a \$15 Federal Minimum Wage Increase

	Total Estimated Workforce	Directly Affected	Indirectly Affected	Total Share of Workforce Affected
District of Columbia	372,884	3,192	7,258	2.8%
Maryland	3,047,895	54,743	46,253	3.3%
North Carolina	4,572,109	1,072,696	436,771	33.0%
South Carolina	2,174,795	540,810	189,334	33.6%
Virginia	4,073,552	603,202	332,338	23.0%
West Virginia	714,738	188,799	61,614	35.0%
<b>Fifth District Total</b>	<b>14,955,973</b>	<b>2,463,442</b>	<b>1,073,568</b>	<b>23.6%</b>

SOURCE: State Demographic Tables, Economic Policy Institute Minimum Wage Simulation Model analysis of the 2021 Raise the Wage Act; authors' calculations.

group. According to Alan Manning in a 2021 *Journal of Economic Perspectives* article, more than 25 percent of teens reported an hourly wage at or below the minimum in 2019. Yet they represent only about 10 percent of all minimum wage workers in 2019 compared to about a third of minimum wage workers in 1979.

Understanding the effect of a \$15 minimum wage requires figuring out the number of workers who make less than \$15 per hour, not less than the current \$7.25. Also, most minimum wage laws increase the wage over time, so any analysis would have to assess how many workers will make less than \$15 in the future, thus requiring a forecast of market-based wage growth. For example, the Congressional Budget Office (CBO) analyzed the proposed Raise the Wage Act of 2021 — which would raise the federal minimum wage in annual increments to \$15 by June 2025 and then increase it at the same rate as median hourly wages — and estimated that by 2025, 17 million workers, or 10 percent of the projected labor force, will earn less than \$15 per hour during an average week in 2025.

In addition, the CBO — consistent with findings in the literature — assumed that the 10 million workers who would have wages only slightly higher than the proposed minimums would also be “potentially affected” on the basis that employers would retain

some pay differences across their workforce. Therefore, according to this analysis, increasing the minimum wage to \$15 through the proposed legislation would affect the pay of about 27 million workers nationwide.

Under different assumptions, particularly about nominal wage growth for low-wage workers, the Economic Policy Institute (EPI) Minimum Wage Simulation Model estimates that the Raise the Wage Act could affect the pay of roughly 32 million U.S. workers by 2025 — considerably more than the CBO estimate. Because of the act’s provision to phase out the tipped worker subminimum wage — increasing it from \$2.13 in 2021 to \$12.95 by 2025 — even states that will have \$15 per hour (or higher) minimum wages in 2025 will see an increase in the number of affected workers. EPI estimates that 2.46 million workers in the Fifth District would be directly affected by the Raise the Wage Act, as would the additional 1.07 million workers making between the new minimum wage and 115 percent of the new minimum. (The 1.07 million workers are comparable to the CBO’s “potentially affected” workers.) West Virginia and the Carolinas, where the minimum wage is at or slightly above the prevailing federal level and where there are no planned increases, would see the largest share of their workforces affected by 2025. (See table.)

Of the estimated 3.54 million Fifth District workers who would see direct or indirect wage increases, 64 percent would be over 25 years old. Teenagers and young adults (age 16-24) comprise 15 percent of the workforce but would account for 36 percent of workers getting a wage boost. Twenty-eight percent of women working in the District would see a wage boost, compared with 19 percent of men. Employees across sectors would be affected by the minimum wage increase, but service industries like retail, restaurants, and accommodations would see some of the highest shares of their employees get wage boosts in the Fifth District. The ripple effect of the minimum wage increase would reach households across the income and education distribution, but low-income households would be most affected.

### IS THE MINIMUM WAGE THE BEST POLICY?

Theoretically and empirically, a higher minimum wage brings many positive and negative forces to bear on employment. It is not always clear which ones will prevail, so judgments must be made in any analysis of the cost and benefit of minimum wage legislation. In the CBO’s analysis of the Raise the Wage Act, two minimum-wage-related employment dampeners (higher prices reducing demand and labor-saving technology

replacing labor) more than offset two employment enhancers (increased demand for goods due to increased income for low-income families and increased demand because of employer monopsony power), leading the CBO to conclude that on the whole the act would reduce employment nationally by 1.4 million in 2025.

The purpose of the minimum wage, of course, is to reduce poverty and enable workers in the lowest paying jobs to maintain a reasonable standard of living. The CBO, in fact, estimated that the Raise the Wage Act would lift 900,000 people out of poverty, which is what a minimum wage hike is generally intended to do. Ellora Derenoncourt and Claire Montialoux of the University of California, Berkeley argued in a 2021 *Quarterly Journal of Economics* article that by extending federal minimum wage coverage to industries such as agriculture, restaurants, and nursing homes — industries with about a third of black workers — the 1966 FLSA resulted in a sharp earnings increase for workers in newly covered industries. The effect was nearly twice as large for black workers as for white workers, with the result that the 1967 extension of the U.S. federal minimum wage explains more than 20 percent of the reduction in the racial earnings gap in the late 1960s and 1970s,

without any effect on employment. Thus, they suggested that minimum wage policy can play a role in reducing racial economic disparities. A similar finding in a May NBER working paper by Niklas Engbom of the Stern School of Business at New York University and Christian Moser of the Columbia School of Business suggests that by compressing firm pay differences, increasing wages higher up the wage distribution, and reallocating workers to more productive employers, the institution of the minimum wage in Brazil greatly contributed to Brazil's decline in wage inequality from 1996 to 2012.

On the other hand, in a 2015 article in the *Journal of Political Economy*, Thomas MaCurdy of Stanford University argued that the minimum wage is an ineffective antipov-erty policy because although on net the minimum wage redistributes income slightly in favor of lower-income households, many poor families suffer, and many rich families gain. The mechanism is through the increased prices: When a firm raises prices in response to the increased cost of labor imposed by a minimum wage hike, the rise in consumption costs is like a tax on the goods and services purchased disproportionately by low-income families.

Regardless of the potential costs and benefits of implementing or increasing

a minimum wage, most economists argue that the minimum wage is, at best, a blunt tool for the more specific policy goals of ensuring that workers can earn enough income to provide for themselves and their households. And there are other tools available. The most used (and perhaps most efficient in terms of targeting financial resources to low-income households while minimizing the effect on the labor supply) is the earned income tax credit, which, for example, helped moved 5.6 million people out of poverty in 2018 and reduced the severity of poverty for 16.5 million. (See “The Payoff from the Earned Income Tax Credit,” *Econ Focus*, Second Quarter 2016.) State and local policymakers are also considering guaranteed income programs or tools to help employers create a wage ladder that will enable workers to advance in their careers without facing sharp drops in income due to ineligibility for government benefits. Arguably, one selling point of the minimum wage is its coupling of a redistributive policy with an incentive to work — something that is a hallmark of the American welfare system. Perhaps the differences in minimum wage legislation among Fifth District jurisdictions and elsewhere will provide even more insight in future research. **EF**

#### OUR RELATED RESEARCH

“Workers for the Right Wage,” Macro Minute blog, Aug. 3, 2021

“Special Survey of Wages and Hiring,” Regional Matters blog, Aug. 5, 2021

“Male Labor Force Participation: Patterns and Trends,” *Econ Focus*, First Quarter 2021

“High Labor Market Churn During the 2020 Recession,” Economic Brief No. 21-06, February 2021

“The Benefits Cliff: Keeping Working Families from Falling Off the Edge,” Speaking of the Economy podcast, Jan. 13, 2021

“Will America Get a Raise?” *Econ Focus*, First Quarter 2016

BY JOHN MULLIN

## Cushioning Destruction to Foster Creation

**P**hilippe Aghion is one of the most widely cited economists on record. He has published over 90 papers in refereed academic journals, co-authored 14 books, and received numerous honors. Together with Peter Howitt, he is a pioneer of a research paradigm called Schumpeterian growth theory, which is based on the notion of “creative destruction” popularized by economist Joseph Schumpeter in the 1940s. Schumpeterian growth theory sets itself apart by building and testing economic models specifically designed to explore the implications of creative destruction. The resulting research is featured prominently in Aghion’s latest book, *The Power of Creative Destruction*, which he co-authored with Céline Antonin of Sciences Po and Simon Bunel of the Bank of France.

Aghion and his co-authors define creative destruction as “the process by which new innovations continually emerge and render existing technologies obsolete, new firms continually arrive to compete with existing firms, and new jobs and activities arise and replace existing jobs and activities.” In their view, creative destruction is no less than the “the driving force of capitalism” — the source of both its greatest accomplishments and its failures.

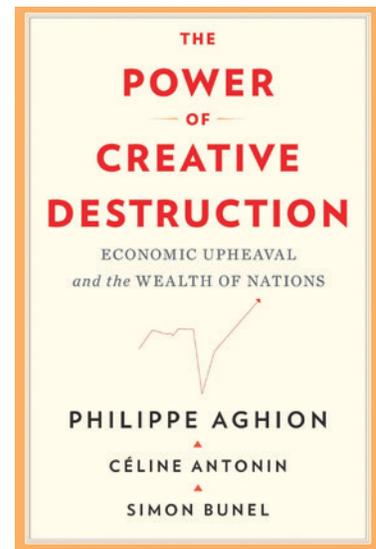
Schumpeterian growth theory is inspired by three ideas: first, that economic growth is primarily driven by innovation and the diffusion of knowledge; second, that decisions to invest in innovation are motivated by the potential returns, and so anything that secures those returns, such as intellectual property rights, will increase the incentive to invest and innovate; and third, that destruction is an inescapable part of creative destruction — a feature of the process that sets the stage for a continuously disruptive

conflict between the old and the new. As Aghion puts it, “creative destruction thus creates a dilemma or a contradiction at the very heart of the growth process.” On one hand, the potential returns to innovation — what Aghion calls “innovation rents” — are necessary to reward innovation; on the other hand, incumbent firms are motivated to block the entry of smaller, more innovative firms into their sectors.

To Aghion, the power of creative destruction is a well-documented reality. It is seen in data showing that startups are a major source of job creation in the United States. It is seen in evidence that the fastest growing U.S. states have been the most intense innovators with the greatest number of patents per capita and the highest rates of job creation and destruction. And it is seen in emerging Europe, where the more rapidly growing economies have been those with higher rates of firm creation and destruction.

*The Power of Creative Destruction* also finds evidence in what it calls historical “growth enigmas.” For instance, why is sustained per capita GDP growth such a recent phenomenon, starting just 200 years ago, and why did it occur in Europe and not in China, where many important technological discoveries had been made since the Middle Ages? A major part of the answer, in Aghion’s view, is that competition in Europe between politically fragmented nations enabled innovation and creative destruction to overcome the opposition of vested interests. In contrast, China enabled incumbent political powers to have the “last word” and block the potentially destabilizing effects of innovation.

According to the authors, government policy should promote



### **THE POWER OF CREATIVE DESTRUCTION: ECONOMIC UPHEAVAL AND THE WEALTH OF NATIONS**

By Philippe Aghion, Céline Antonin, and Simon Bunel, Cambridge, Mass.: The Belknap Press of Harvard University Press, 2021, 389 pages

innovation in several ways. First, the state has a role as an “investor in innovation,” which arises because people undervalue the contributions of their investments to society’s collective knowledge. Second, the state needs to protect intellectual property rights to maximize firms’ incentives to make R&D investments. And third, the state needs to establish policies to lessen the opposition to innovation. At the level of markets, this means the reduction of barriers to competition. For workers, it means providing unemployment insurance and job training assistance to protect against the dislocation caused by job losses.

*The Power of Creative Destruction* ties the need for social insurance to the crucial roles played by social norms and civil society. It holds that an economic system that achieves long-term growth but causes devastating outcomes for many uninsured individuals may not be able to sustain itself by maintaining the consent of civil society. Sustained innovation, therefore, relies on the state as an insurer to cushion the destructive aspects of capitalism. **EF**

BY KARTIK ATHREYA

## Is the Fed Too Active?

Some observers have recently voiced concern that Fed activities in the areas of climate change and inequality may put the institution at risk. In a forthcoming *Duke Law Journal* article, for instance, Christina Parajon Skinner of the University of Pennsylvania's Wharton School argues that the Fed must avoid the temptation to engage in "central bank activism" by pushing its powers beyond the text and purpose of its legal mandate to address "immediate public policy problems" such as climate change and economic inequality. She cautions, "Activism undermines the legitimacy of central bank authority, erodes its political independence, and ultimately renders a weaker central bank." In a recent *Wall Street Journal* op-ed, Michael Belongia of the University of Mississippi and Peter Ireland of Boston College voiced similar concerns about Fed activities in the area of income inequality.

These are points that I as a central banker take to heart. The Fed's mandate is, indeed, derived from and circumscribed by laws passed by Congress, so it is incumbent upon us to understand and heed the limits of the mandate. A central distinction that these critics have sharpened for me is the one between *conducting research* to better understand issues of obvious macroeconomic relevance versus *advocating* for specific policies to change outcomes. To fail at the former would be derelict in light of the Fed's existing mandate, just as doing the latter would take us afield.

In the arena of climate change, our focus at the Richmond Fed has been on conducting and supporting research to better understand its potential implications for the macroeconomy, including across the array of key stakeholders (consumers, business, the energy sector). Our activity includes conducting research aimed at measuring how climate change and extreme weather affect U.S. growth and financial stability. And it includes engagement with experts from across sectors, including carbon-producing ones, on how to best navigate the road ahead. What this means for even *our* policy, though, is not yet clear. As Fed Chair Jerome Powell has stated, "We're quite actively exploring exactly what climate implications are for our supervisory, regulatory and financial stability responsibilities."

In the arena of income inequality, it is important to start by recognizing the Fed's longstanding mandate under the Community Reinvestment Act (CRA) of 1977. The CRA requires the Fed "to encourage financial institutions to help meet the credit needs of the communities in which they do business, including low- and moderate-income neighborhoods."

So the goal of redressing at least some aspects of economic inequality has long been a Fed concern. Indeed, the Richmond Fed strives to understand the full range of economic outcomes of Fifth District residents, including inequities, and among them, those that occur along racial lines. To fail here would hinder our ability to fulfill our mandate under the CRA and to provide better information via the *Beige Book* and other means to guide monetary policy. As Richmond Fed President Tom Barkin has pointed out, "The regional Fed banks are charged

with understanding the dynamics within our districts. In pursuit of that goal, we have been investing in research that addresses these issues and the racial inequities that result."

Lately, the connection between monetary policy and economic inclusion has drawn increased attention. Some observers have voiced concern that the goal of redressing income inequality could create an "easing" bias in monetary policy, while others have argued that monetary policy has enriched asset holders and left low-wealth households behind. There is no

doubt that Fed leadership is concerned about how its policies matter for those at the lower end of economic well-being. This concern seems fully consistent with the Fed's longstanding dual mandate under the 1978 Humphrey-Hawkins Act — otherwise known as the Full Employment and Balanced Growth Act.

From a research perspective, though, there is a narrower reason for Fed researchers to better understand broad disparities in the economy, such as those that occur along racial lines: Like virtually any disparity between groups that themselves contain huge variety (especially race), sustained racial gaps are not plausibly consistent with an economy operating at its potential.

A bottom line for me is this: We should always strive to *understand* forces that plausibly matter for U.S. macroeconomic performance. This includes climate change and large-scale economic inequalities. But because it is important for the Fed to remain clearly rooted in its congressional mandates, our externally facing activity needs to stay focused on trade-offs and, aside from clear "win-win" cases, avoid advocating for policies that lie outside our remit. My aim for the Richmond Fed is to ensure that our research, and the best work we know of, informs the public and policymakers about the economic trade-offs at play. **EF**

**"We should always strive to understand forces that plausibly matter for U.S. macroeconomic performance."**

*Kartik Athreya is executive vice president and director of research at the Federal Reserve Bank of Richmond.*

# NEXT ISSUE

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## SMALL BUSINESS SURGE

Recessions are often hard on small businesses, new and old alike. The Great Recession saw many small businesses close their doors, and new business formation remained depressed for years after the official end of the downturn. But the recovery from the COVID-19 recession is looking different — new business applications have rebounded sharply since the initial lockdown in 2020. The question is why.

## SHIFTING AWAY FROM DEGREES?

Student debt in the United States has reached more than \$1.5 trillion. As the financial burden of higher education has worsened for many, there's increasing discussion of alternatives to college degrees as a gateway to good jobs.

## PREDICTING INFLATION

After a few months of historically high inflation measures, economists and Fed policymakers are studying whether inflation will continue to accelerate or whether current price increases will prove transitory. But forecasting inflation is notoriously difficult — research shows that markets, consumers, and economists have rarely anticipated past changes in inflation.

## GENGHIS KHAN, TRADE WARRIOR

Genghis Khan established an empire that extended from China to the Adriatic Sea. In the process, he and his armies were responsible for the deaths of as many as 40 million people. But his legacy extends far beyond his military deeds. Among the Mongol Empire's most enduring accomplishments were the development of the Silk Road and an enormous expansion of global trade.

## ASSESSING PAYCHECK PROTECTION

Under the Paycheck Protection Program, small businesses received hundreds of billions of dollars in loans that were guaranteed by the Small Business Administration and forgiven if they were used for payroll or some other designated purposes. Several teams of economists have completed preliminary assessments of the program. Is it a promising template for future crises?



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# Community Conversations

The Richmond Fed visits towns and cities throughout the Fifth District to meet with small groups of stakeholders and learn more about the well-being of those places. The visits provide an opportunity for Richmond Fed leadership to share and gather information about the economy.

**May 2021: Parkersburg, West Virginia**

**March 2021: Greenville and Spartanburg County, South Carolina**

**March 2021: Manassas, Virginia**

**February 2021: Northeastern South Carolina**

View summaries of all our Community Conversations on our website  
[https://www.richmondfed.org/community\\_development/conversations](https://www.richmondfed.org/community_development/conversations)

