

ECONFOCUS



A PANDEMIC-ERA STARTUP BOOM

**A surge of interest in starting
new businesses could reverse
a long-running drought**

**Forecasting
Inflation**

**Seeking College
Alternatives**

**Interview with
Edward Glaeser**

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Cover Image: Getty Images

Challenges of Forward Guidance

For much of its history, the Fed was famously tight-lipped about its actions. It's hard to believe now, but until 1994, we did not publicly release a policy statement after each Federal Open Market Committee (FOMC) meeting. The minutes of meetings also remained secret until the late 1960s and then were released only after about a 90-day lag.

We have come a long way since those days. Today, the Fed issues a policy statement immediately after each FOMC meeting, releases the minutes three weeks later, and releases verbatim transcripts after five years. This increased transparency is healthy for the Fed as a public institution, and it was also supported by a growing body of research that emphasized the importance of central bank communication and credibility.

The Fed's initial steps toward greater transparency involved providing more information about current monetary policy. But in the early 2000s, the Fed also began to provide general information about the likely path of future policy through "forward guidance." During the Great Recession, the Fed again employed and continued to evolve its forward guidance. At first, the FOMC used general language as it had previously. Then, it introduced specific, calendar-based guidance in its August 2011 statement, signaling that it would likely be necessary to maintain low rates "at least through mid-2013."

The move to calendar-based forward guidance was heavily debated within the committee at the time, as the transcripts of the meetings from that period reveal. Some policymakers felt that a calendar date helped reinforce the Fed's forecasts for the future path of the economy, which the FOMC began releasing in the form of the Summary of Economic Projections, or SEP, earlier that year. But others



worried that tying future policy to a date put the Fed in an awkward position. If economic conditions didn't evolve the way policymakers predicted, then they would either have to follow through on a date-based plan that no longer made sense or revise the date, diminishing its value as a signal of future behavior. In times of great uncertainty, that was asking for Fed credibility to be put on the line.

THE SHIFT TO OUTCOME-BASED GUIDANCE

In December 2012, the FOMC moved from calendar- to outcome-based guidance. It said it would be "appropriate" to keep rates low "at least as long as the unemployment rate remains above 6-1/2 percent, inflation between one and two years ahead is projected to be no more than a half percentage point above the Committee's 2 percent longer-run goal, and longer-term inflation expectations continue to be well anchored."

This approach made it clearer that Fed policy would be driven by economic conditions, not dates. It was

an effort to provide the public with a clearer understanding of how the Fed would react to new data, and it gave the Fed greater flexibility in times of heightened uncertainty.

Still, the transition to outcome-based guidance wasn't seamless. The formula outlined at that time isn't a simple one. Certainly, those three criteria don't just roll off the tongue. It's also not a precise one, as judgment calls are required. How would the public know if inflation expectations were no longer well-anchored? (See "Forecasting Inflation," p. 24.)

Another potential problem is that the outcomes in the statement could prove wrong if the economy shifted. This means that as with dates, the Fed might need to revise its outcomes, leading to similar communication and credibility challenges. This is one reason why the Fed doesn't attach a specific number to the employment goal in its forward guidance today.

The Fed is facing challenges now as it seeks to navigate a highly uncertain recovery from the pandemic. Inflation has been above our long-run 2 percent target for months, but how long will this run-up in prices persist? Employment remains far below pre-pandemic levels, but has the economy changed in ways that have shifted the maximum level of employment? What about fiscal policies not imagined when our guidance was defined?

Finally, it seems clear to me that many audiences find outcome-based guidance unsatisfying because it cannot provide a definitive roadmap of the Fed's future policy path. Trading instruments are often date-based, so traders would prefer to know exactly when monetary policy is going to change. For reporters and the public they serve, outcome-based guidance can seem like inside baseball and is not as easy to process as dates.

WHERE DO WE GO FROM HERE?

If the public keeps asking for dates, should the Fed go back to issuing calendar-based forward guidance? It's clear from past experience that this isn't the optimal path. Markets and reporters may want clear dates, but in times of high uncertainty, the Fed can't credibly commit to guiding policy by dates rather than data.

Sticking with outcome-based guidance, the Fed could try to be more specific about its thresholds, but past experience also suggests this approach has limitations. It's harder to get alignment among the committee. The higher the level of specificity, the higher the risk that you'll bind yourself to a less than optimal path. Surely, there's some value to leveraging good judgment. In addition, some of the Fed's objectives, like maximum employment, are hard to forecast and are influenced by factors outside of our control.

We could strengthen the connection between the SEP and outcome-based guidance. I like the SEP because it disciplines me to tie my policy prescription to my economic forecast. In times when forward guidance is a crucial component of Fed communications, I think that through very carefully. That said, since the SEP isn't a committee consensus, we could still

run into a communication problem where the SEP and policy statement send conflicting messages.

Ultimately, I think the most important thing we can do to build confidence in forward guidance is to cleanly execute. In the early 2000s, the Fed signaled that it would follow a gradual path for rate liftoff and then did so. The so-called "taper tantrum" of 2013 — when long-term bond yields surged suddenly in reaction to an announcement by the Fed that it would soon taper its buying of bonds — was an example of when Fed communications and forward guidance were not so well aligned.

Hopefully, we are executing during the COVID-19 recovery in a way that builds credibility. Regarding our guidance on asset purchases, we have maintained a stable course. In December, we said we would continue "until substantial further progress has been made toward the Committee's maximum employment and price stability goals." In July, we said that "the economy has made progress toward these goals." In September, we said that "if progress continues broadly as expected, the Committee judges that a moderation in the pace of asset purchases may soon be warranted." That is the advance warning we had promised so that no one would be

surprised when the time to start tapering came, as it did in November.

That still leaves forward guidance on rates, which is explicitly different. We said in September 2020 that we would keep rates near zero until "labor market conditions have reached levels consistent with the Committee's assessments of maximum employment and inflation has risen to 2 percent and is on track to moderately exceed 2 percent for some time." We have hit 2 percent on inflation, but we still have a lot to learn about whether recent inflation levels will be sustained and how much room we have to run in the labor market until we get to maximum employment. As COVID-19 eases, if all goes well, I expect the answers to these questions to become clearer.

Cleanly executing communication is my goal. Doing so best cements outcome-based guidance as a tool comfortable for us and valuable for the markets and for the public. **EF**



A longer version of this essay was delivered as an address to the Forecasters Club of New York on Oct. 14, 2021.

OUR RELATED RESEARCH

"How Broad-Based Is the Recent High Inflation?" Economic Brief No. 21-30, September 2021

"The Fed's New Framework," *Econ Focus*, First Quarter 2021

"Lending Relationships and Optimal Monetary Policy," Working Paper No. 20-13, September 2020

"What Does the FOMC's Shift in Fed Funds Rate Target Language Mean?" Economic Brief No. 21-22, July 2021

"How Macroeconomic Forecasters Adjusted During the COVID-19 Pandemic," Economic Brief No. 21-19, June 2021

"Monetary Policy across Space and Time," Economic Brief No. 19-08, August 2019

BY KATRINA MULLEN

New from the Richmond Fed's Regional Matters blog

Roisin McCord. "Wages Are Rising: How Far Will They Go?"

The "availability of skills needed" indexes — which measure the percentage difference in firms that report it is easier or harder to find workers — is produced by the Richmond Fed as part of its Fifth District manufacturing and services surveys. These data suggest that across the country, and in the Fifth District, firms are finding it increasingly difficult to hire workers. Of the 74 percent of firms that reported this hiring challenge in a recent administration of The CFO Survey, more than half said it was decreasing their revenue. Perhaps as a result, Fifth District firms have reported increasing wages since last August with accelerating year-over-year wage growth throughout this year, and almost half believe wage changes will trend greater than normal in the coming months.

Tiffany Hollin-Wright and Surekha Carpenter. "Rural Spotlight: A Path to Redevelopment in West Virginia."

The City of Elkins in Randolph County, W.Va., is home to Woodlands Development Group and Woodlands Community Lenders. Collectively known as Woodlands, the community development corporation and financial institution acts as a lender and real estate developer. With generally lower median household incomes and higher poverty rates in its service area compared with the state overall, Woodlands collaborates with other community development financial institutions, banks, and organizations. It also leverages its unique dual mission to finance and restore residential and commercial developments. The influx of federal dollars and recent policies, such as West Virginia's permanent State Historic Rehabilitation Tax Credit, SB344, has given Woodlands more financial stability and more ability to invest in long-term projects.

Roisin McCord and Alexander Nikolov. "Demand for Goods Grows: Will Manufacturers Be Able to Meet It?"

Shortly after the start of the COVID-19 pandemic, consumer spending on goods increased. Spending has continued to grow, which has hindered manufacturers' ability to keep up with demand. Comments from business managers in the Richmond Fed's business surveys supported this. Even as manufacturers attempted to increase production, supply chains suffered: Manufacturers still face long backlogs, depleted inventories, disruptions, and labor shortages. In turn, labor shortages have affected production as employers struggle with skill matching, absenteeism, and transportation delays.

Lucas Moyon and Laura Dawson Ullrich. "State Budget Surpluses, the COVID-19 Impact, and ARPA Funds."

Economists and policymakers expected dire revenue losses for state governments in 2020 because of the COVID-19 pandemic. Much to their surprise, however, all Fifth District states — except for West Virginia — experienced the opposite, including a

quicker recovery in revenues compared to past recessions. These state and local governments saw not only increased revenues, but also budget surpluses ranging from \$413 million in West Virginia to \$2.6 billion in Virginia. Congress responded quickly to the pandemic with fiscal relief to state and local governments: the CARES Act and the American Rescue Plan Act, which have given governments the opportunity and flexibility to spend on programs and improvements.

Katie Daniluk and Sierra Latham. "The Pandemic's Toll on Minority Women in the Labor Force."

Although the Black and Hispanic labor forces experienced steeper declines in employment compared to White workers during the peak of the COVID-19 pandemic, they have seen a faster recovery this year. Yet women, particularly Black and Hispanic women, have not experienced the same recovery, largely due to child care responsibilities and job losses in heavily female-populated industries, such as accommodation and food services, education, and health services. In addition to child care, workforce challenges persist: burnout, health risks, and mismatches between workers' skills and firms' needs.

Renee Haltom. "Rural Spotlight: Advancing Early Childhood Education in Danville-Pittsylvania."

Early childhood education has come a long way in Danville and Pittsylvania County, Va. Compared with the state as a whole, these areas have high poverty levels for children under 6. The region's children also have low test scores and inadequate literacy skills. The Danville Regional Foundation invested \$5.4 million in the region's early childhood education efforts, including \$3.4 million in Smart Beginnings Danville Pittsylvania (SBDP), a partnership among organizations, schools, and families that prepares children for kindergarten. In the last decade, SBDP has built an early childhood education ecosystem that has given more students access and resources to thrive. **EF**



A Pandemic-Era Startup Boom

A surge of interest in starting new businesses could reverse a long-running drought

Although the data are still coming in, early evidence suggests that the economic downturn triggered by the coronavirus pandemic in 2020 hit businesses hard. University of California, Santa Cruz economist Robert Fairlie estimated that the number of active business owners in the United States fell by 3.3 million or 22 percent in the first few months of the pandemic. Some of those closures were a temporary response to lockdown requirements, but even so, the pandemic represented a historic challenge for many business owners.

At the same time, recessions can present opportunities for those looking to start their own business. Many successful startups were born in recessions, including the Walt Disney Co., Microsoft, CNN, Trader Joe's, Uber, and Airbnb. That entrepreneurial spirit appears to be alive and well today.

One business founder of the pandemic era is Chris Evans of Raleigh, N.C. Evans, who describes himself as a “serial entrepreneur,” started his first company in the 1980s during his freshman year at North Carolina State University and has built startups in a variety of fields since. When the pandemic hit, he partnered with an inventor at N.C. State to start Aries, a company that produces breathable, high-filtration masks using a new type of fabric technology.

“This felt like a moment to do something different and be part of the solution to the pandemic,” says Evans.

According to the U.S. Census Bureau's Business Formation Statistics, which collects the number of people filing for an Employer Identification Number (EIN) with the IRS, Evans is far from alone in seeing new opportunities during the last year. Business owners expecting to hire employees must file for an EIN for payroll tax purposes, and many sole proprietors choose to file for one to facilitate various business activities.

According to these figures, applications for new businesses surged to record highs starting in the summer of 2020 and have remained above pre-pandemic levels. (See chart.) Filing for an EIN is free, and not everyone who applies will necessarily open a business, so these numbers almost certainly overstate the number of actual new businesses being created. But economists who study business activity have found that EIN applications have historically been a good leading indicator of startup activity over the next one to two years. This suggests that we may soon be in the midst of a startup wave, which is not what most researchers would have predicted.

DECADES OF DECLINING DYNAMISM

When the COVID-19 recession began, many economists worried that the eventual recovery would be slow, like the aftermath of the Great Recession of 2007-2009. In the wake of that downturn, the startup rate for new businesses declined and remained depressed long after the recession had ended: It was still 24 percent lower in 2018, nine years into the recovery, than it had been in 2006. That wasn't all. Economists who began researching the startup decline after the Great

Recession discovered that it was only part of a longer-running trend stretching back decades to the early 1980s.

Fewer new firms means that economic activity has increasingly become concentrated in larger, older businesses, and there is mounting evidence that this has had several negative consequences for the economy.

First, young firms create a disproportionate share of jobs. Policymakers often refer to small businesses as the engines of growth in the economy, but that is not quite right. In a 2013 article in the *Review of Economics and Statistics*, John Haltiwanger of the University of Maryland, Ron Jarmin of the Census Bureau, and Javier Miranda of the Halle Institute for Economic Research and the University of Jena found that a firm's age rather than its size is the key. New firms, rather than small businesses in general, are the more significant sources of job creation.

Young firms are more likely to grow rapidly than older businesses, and since new businesses tend to be small when they start, this explains the apparent correlation between small businesses and growth. But not all small businesses grow — most stay small (think of a family-run restaurant or a solo services provider, like a self-employed plumber). New businesses that are poised for growth tend to either grow rapidly early in their life cycle or fail.

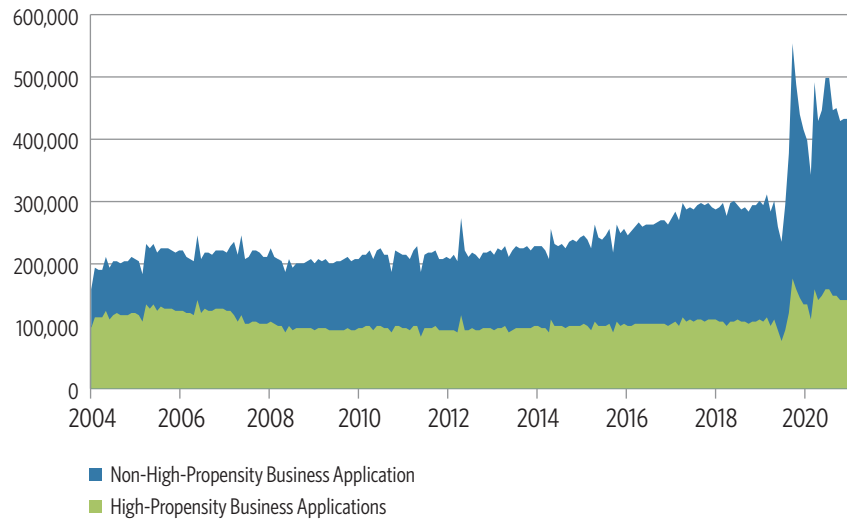
Jay Bigelow, head of entrepreneurship at the Council for Entrepreneurial Development (CED) in North Carolina, has seen this rapid growth in startups many times. CED is a nonprofit focused on connecting entrepreneurs in the Research Triangle area of North Carolina with mentors, financial backing, training programs, and other resources. Bigelow says he's seen many tech startups grow from a handful of employees to hundreds in just a few years.

"Once these companies start to scale, they tend to hire fast," he says.

The role that young businesses play in job creation also means the decline in the startup rate has implications for how the economy recovers from recessions. In a 2019 article,

Startup Surge

Applications for new IRS Employer Identification Numbers



NOTE: Counts are the quantity of federal Employer Identification Number (EIN) applications. The Census Bureau classifies high-propensity businesses as those most likely to hire employees, based on their indications of intent to hire in their EIN applications and other factors.

SOURCE: U.S. Census Bureau Business Formation Statistics

Benjamin Pugsley of the University of Notre Dame and Ayşegül Şahin of the University of Texas at Austin argued that the lower startup rate and overall aging of businesses in the economy has contributed to more "jobless recoveries" from recessions. That's partly because the decline in startups has an immediate effect on employment growth, but also because over time this decline has shifted the composition of the economy toward older firms, which tend to respond less to business cycles.

"In the recovery to a business cycle, we don't expect older firms to expand as quickly as the business environment improves," says Pugsley.

Fewer startups could also hurt productivity growth. Austrian-born economist Joseph Schumpeter popularized the term "creative destruction" to describe the process in which capital and labor are reallocated from failing firms to new ones. As startup rates have fallen, businesses have become less responsive to changes in productivity, and the pace of job reallocation has slowed, according to a 2020 article in the *American Economic Review* by Haltiwanger, Jarmin, Miranda, and Ryan Decker of the Federal Reserve Board of Governors. They concluded that if the pace of job reallocation had remained the same as in the early 1980s, total factor productivity (a

measure of the overall productive efficiency of the economy) in the 2000s would have been about 33 percent larger.

AN UNEXPECTED RECOVERY

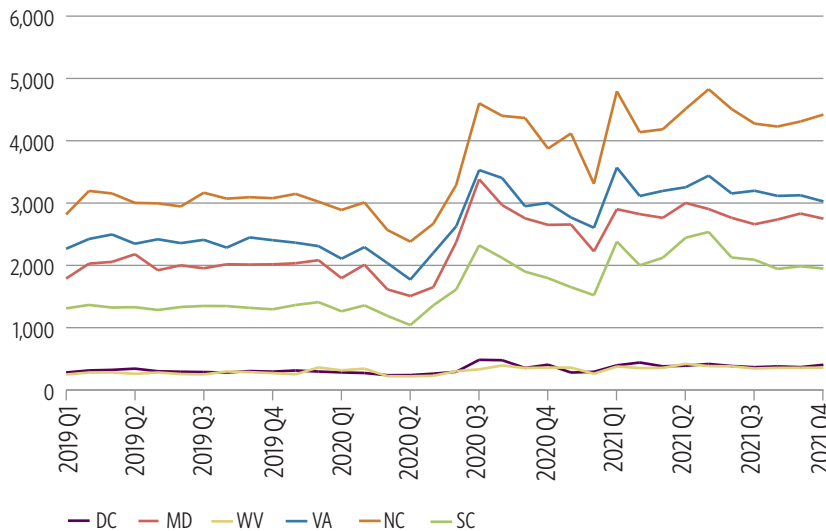
There was every reason to expect that the startup shortfall would continue through the pandemic. The climate for starting a new small business certainly didn't look very hospitable in the spring of 2020. Large sectors of the economy were shut down in an effort to slow the spread of the virus, and even in the absence of local mandates, demand for in-person services like dining out, travel, and hospitality was severely depressed as many consumers stayed away to avoid infection.

After an initial drop, though, applications for new businesses quickly surged. From a low point of nearly 235,000 in April 2020, applications for new business EINs more than doubled to nearly 553,000 just a few months later. Over the past year, monthly applications have continued to come in at a pace faster than any time since the start of the data series in 2004.

The industry that saw the biggest spike in applications was retail trade — specifically, online retail. While e-commerce has been around for decades, in 2019 it still only accounted for

Entrepreneurship Across the Region

High-propensity business applications in the Fifth District



NOTE: Counts are the quantity of federal Employer Identification Number (EIN) applications. The Census Bureau classifies high-propensity businesses as those most likely to hire employees, based on their indications of intent to hire in their EIN applications and other factors.

SOURCE: U.S. Census Bureau Business Formation Statistics

11 percent of total retail sales in the United States. But in 2020, online sales jumped by about 32 percent. With many brick-and-mortar stores temporarily closed, households went online to do their shopping. At the same time, websites like Shopify and Etsy have made it easier for anyone to open an online business. Both platforms reported significant growth over the last year.

In some places, the pandemic seems to have supercharged preexisting entrepreneurial trends. North Carolina has long had a strong startup climate, but 2020 and 2021 have been record-setting years for new business filings. North Carolina's secretary of state's office recently projected that startups there would exceed 190,000 in 2021. In a survey of these new entrepreneurs, the department found that most of them decided to start their own business to seek new opportunities rather than to replace lost income.

"People are putting their faith in themselves and taking greater control over their own future," says Thom Ruhe, CEO and president of NC IDEA, a private foundation that supports entrepreneurs in North Carolina. Ruhe says they have seen a record number of applications for their programs over the last year.

States across the Fifth District have seen a bump in new business

applications, although the increase has been more pronounced in Virginia, Maryland, and the Carolinas than in West Virginia and Washington, D.C. (See chart.)

"After an initial downturn, we've definitely seen an increase in the number of individuals who are seeking assistance to launch a new business," says Jody Keenan, the state director of the Virginia Small Business Development Center, which partners with the U.S. Small Business Administration to help entrepreneurs and small-business owners across Virginia.

WHAT CHANGED?

Why has the startup recovery been so much stronger this time compared to the Great Recession?

One difference is that the initial economic hit of the pandemic was much deeper than the financial crisis. The unemployment rate peaked at 10 percent in 2009 but reached nearly 15 percent in 2020. That means there were potentially more people in need of an alternative source of income who decided to start their own business. The pandemic also disrupted schools and day care services, prompting some parents to find new sources of income that allowed them to work from home and care for their children. Nearly

half of the people who started a business on Etsy in 2020 did so because of COVID-19, according to a survey by the company. One in five sellers reported turning to Etsy because they lost their job or were unable to find work, while another 8 percent said they were unable to work because they had to care for a family member. To be sure, some of these entrepreneurs may have preferred to stick with a wage-earning job, so it is possible that not all of this startup activity will prove to be optimal for the economy.

Whether someone chooses to become an entrepreneur out of necessity or from a desire to be his or her own boss, starting a new business takes capital. It is perhaps unsurprising, then, that economists have found that wealthier individuals are more likely to become entrepreneurs. Unlike in most recessions, many households actually became wealthier during the pandemic. The personal savings rate jumped from around 7 percent before COVID-19 to nearly 34 percent in April 2020. Savings fell back to pre-pandemic levels by summer 2021, but they remained elevated for much of the past year.

The surge in savings was thanks in part to multiple rounds of stimulus checks sent out to the majority of American households. Additionally, many households postponed spending on travel and dining out during the pandemic. Some of that spending shifted to durable goods, but some simply banked money they weren't spending on services. These savings would help cover the startup costs to open a business.

Another source of capital for entrepreneurs is the equity in their homes. Unlike in the Great Recession, home prices have appreciated dramatically over the past year. According to the S&P/Case-Shiller U.S. National Home Price Index, home prices in July 2021 were nearly 20 percent higher than in July 2020.

These differences could explain the current rise in business applications, but economists have also identified long-running factors that appear to have contributed to the depressed startup rate in recent decades, and

those haven't changed. In a recent paper with Fatih Karahan of the New York Fed, Şahin and Pugsley argued that much of the decline in new businesses since the late 1970s can be explained by demographics.

"There is an incredible decline in the growth rate of the labor supply over the exact same period where you see the decline in the business entry rate," says Pugsley. The postwar baby boom and the entry of more women into the workforce boosted the labor supply in the 1960s and 1970s, but those forces began to wane by the 1980s, when the startup rate also began to decline.

Pugsley explains that there is a strong economic argument why these two trends should be linked. More workers means downward pressure on wages, initially making existing businesses more profitable. It also makes it more enticing for new businesses to enter the market. As a result, the number of businesses grows as labor demand expands to meet labor supply. These forces work in reverse when the labor supply shrinks.

Other researchers have also pointed to growing market power among incumbent firms as a force that is depressing startups. (See "Are Markets Too Concentrated?" *Econ Focus*, First Quarter 2018.)

Evans of Aries says that in some ways, the opportunity cost of becoming an entrepreneur has gone down. Entrepreneurs can get access to health insurance without an employer, and the gig economy provides a safety net for them to fall back on if their idea doesn't pan out. On the other hand, he believes it has become harder to break into markets with large incumbent firms and to build a startup that lasts.

"Most new companies underestimate

what it takes to change a consumer habit," he says. "They may be offering a better way to do something, but that doesn't necessarily lead to adoption."

LOOKING AHEAD

The Census Bureau's Business Formation Statistics also offer another clue about the future of startups. When registering for an EIN, applicants indicate whether they plan to hire workers and pay wages or not. Based on this and other characteristics, the Census Bureau classifies new business filings that are likely to have a payroll as "high-propensity business applications."

A recent article in *AEA Papers and Proceedings* by Haltiwanger, Emin Dinlersoz of the Census Bureau, Timothy Dunne of the University of Notre Dame, and Veronika Penciakova of the Atlanta Fed found that while both high-propensity and nonemployer applications rebounded after the sharp decline in spring of 2020, the surge in nonemployer applications has been much stronger.

It's hard to say for sure how many of these nonemployer businesses will contribute to job creation, but historically that number has been low. In a 2019 article, Nikolas Zolas of the Census Bureau along with Miranda and Fairlie found that very few nonemployer startups go on to hire anyone else. If they do, it typically happens within the first year after the business is created.

In addition, there's a question of how many of these nonemployer firms will endure at all. Miranda, Zolas, and Fairlie also found that nonemployer startups have a much lower survival rate than young firms with employees. In their sample, fewer than a quarter made it to year five. This suggests

that a significant share of the post-pandemic startup surge may not last.

"We don't know how 'sticky' these new business starts will be," says Keenan of the Virginia Small Business Development Center. "Some people start something to fill an immediate need, and then when the economy recovers, if their business hasn't been as fruitful as they wanted it to be, they may jump back into the job market."

"While we have seen a significant uptick in new businesses, many are not surviving or thriving," says Jay Nwachu, president and CEO of Innovation Works in Baltimore, which supports entrepreneurs who serve the most distressed neighborhoods in the city. "Some people might be starting businesses, but their ability to grow that business is going to face the same challenges as before because the infrastructure didn't get any better as a result of the pandemic."

But others point to the pandemic inspiring more people to take a chance on their own ideas. Bigelow of CED has spent three decades in the Research Triangle of North Carolina both starting his own companies and helping other entrepreneurs get started. He says that in the past, many people preferred to go work for big corporations. But now, more business schools are teaching entrepreneurship, and he sees a greater interest in people taking the risk to start their own venture.

"I think 20 years ago if you said you were an entrepreneur, most people would have thought that it was because you couldn't get hired," says Bigelow. "Now, people are leaving corporations to start their own business not because they were laid off, but because they see an opportunity and they want to control their own destiny." **EF**

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An EVOLVING ROLE *for* COLLEGE

*Will four-year
degrees become less
of a gateway for
high-paying jobs?
Should they?*

BY NEERAJA DESHPANDE

There are 165.2 million student loan accounts in the United States that hold an aggregate student debt of \$1.57 trillion, a historic high. On its own, this situation might be fine: If students take out loans to finance an education they otherwise would not be able to afford, and if this education provides graduates with better employment prospects and an increased wage that allows them to repay their student loans, then the system is working.

What's concerning is that while a college wage premium exists for bachelor's degrees, it has been stagnating.

According to researchers at the Cleveland Fed, all growth in real wages for bachelor's degree holders since the 2000s was accounted for by those who also have a master's degree. Meanwhile, the wages of the bottom 60 percent of college graduates have actually fallen by 2.4 percent between 2000 and 2018, according to analysis by economist Elise Gould of the Economic Policy Institute. (See chart.) Simply put, college, with rising debt and falling payoffs, may be a shakier investment today than it has been in the past.

Some firms are starting to see degree requirements as needlessly

prohibitive and believe that dropping degree requirements for some positions can actually be a net advantage to their bottom lines. Moreover, especially in light of the COVID-19 pandemic's disruptions to labor markets, building a more open labor force for all has become a central aim of policymaking — the Federal Open Market Committee, for instance, has said in its 2020 Statement on Longer-Run Goals and Monetary Policy Strategy that maximum employment is “a broad-based and inclusive goal.” What is the role of higher education in a more inclusive labor force?

COLLEGE AND WORK: A HISTORICAL PERSPECTIVE

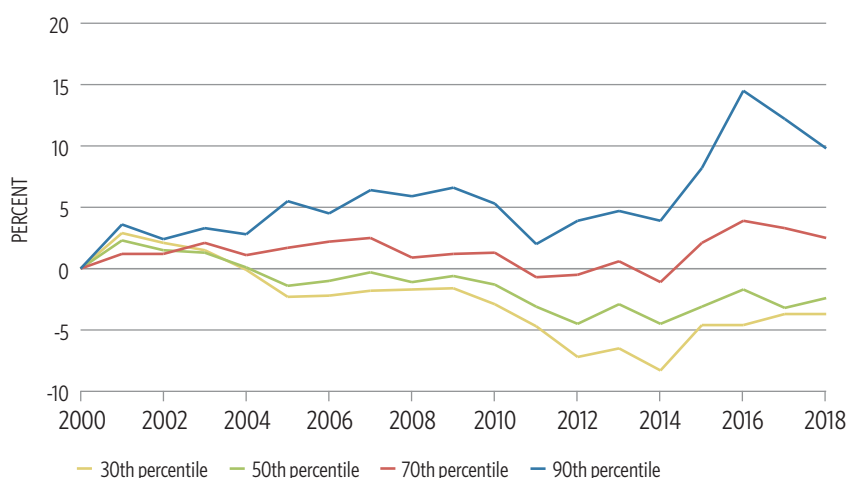
While the importance of obtaining a university education in order to get a well-paying job is often perceived as a distinctly modern phenomenon, the American university's role in students' labor market preparedness began as far back as the 19th century. Advances in science as well as growing public interest in the social problems wrought by industrialization increased the returns to academic specialization along with the number of subjects that universities offered. By the end of the 19th century, universities shifted from being institutions of teaching to being institutions of teaching and research, giving them the capacity to grow their programs. Universities then began to supplant professional institutions, such as medical schools and law schools, that used to stand independently of the university system and usually did not require any college education prior to entry.

Informal apprenticeships that used to suffice as professional training were progressively deemed inadequate over the course of the 20th century. Scientific advancement, state credentialing requirements, and a greater desire for reputational legitimacy among professional fields made formal, academic education the default for anyone desiring to enter professions like medicine, dentistry, pharmacy, engineering, and law. Eventually, a four-year degree became a prerequisite to enter professional school.

There is, then, a historical precedent for today's pattern of employers

Many College Grads Have Seen Wage Declines

Cumulative percentage change since 2000 in real hourly wages of college-educated workers, by wage percentile



NOTE: Sample based on workers with only a four-year college degree.

SOURCE: Economic Policy Institute analysis of Current Population Survey Outgoing Rotation Group microdata from the U.S. Census Bureau.

requiring higher and higher levels of formal education for jobs that previously did not require it. The primary difference between then and now is that the rising credential requirements that were once limited to professional careers have now spread to nearly all white-collar careers, a phenomenon that Harvard Business School's “Managing the Future of Work” project has labeled “degree inflation.” The project's 2017 report, *Dismissed by Degrees: How Degree Inflation Is Undermining U.S. Competitiveness and Hurting America's Middle Class*, found that middle-skill positions — like those of secretaries, clerks, and sales representatives — that have been seen, culturally, as pathways to middle-class life, now mostly require college degrees, despite not having required them in the past. Bachelor's degree attainment has persistently climbed over the decades, having risen more than eightfold between 1940 and 2019, from 4.6 percent of the U.S. population to 36 percent.

Criticism of hiring practices that rely on college degrees has historical precedent too. As far back as 1970, University of Pennsylvania sociologist Ivar Berg wrote in *Education and Jobs: The Great Training Robbery* that workers were overeducated relative to their actual productivity gains, which meant society was overinvesting in

education. Likewise, in 1999, Stanford University historian of education David Labaree argued in *How to Succeed in School Without Really Learning: The Credentials Race in American Education* that social mobility, not learning, had become the primary goal of educational attainment, distorting education itself from a public good, to be shared by all, to a private good, reserved for each individual.

Two decades later, Labaree says the current educational system, for better and for worse, is a meritocracy. “The hierarchy is not just defined by who is capable, but the rewards are so much higher for being just a notch above other people,” he says. In other words, many of today's social and financial returns to college come from the competitive edge over non-college educated workers that college-educated workers gain from their degrees.

WHERE THE COLLEGE PREMIUM COMES FROM

Despite stagnation in the college wage premium, it still exists and remains large. The field of economics has two theories as to why: human capital and signaling.

The idea of human capital was developed by economists Gary Becker, Jacob Mincer, and Theodore Schultz in the late 1950s and early 1960s.

Human capital functions much like regular capital, but instead of machines or natural resources, human capital is the stock of human ability, knowledge, and, more generally, the investments that people make in themselves and in each other — investments like education. If a well-prepared student goes to college, studies something that the labor market demands, and graduates with a degree, human capital theory states that his or her productivity will increase as a result of that education, which explains why his or her wage is higher than that of someone with only a high school diploma.

Signaling theory presents a perhaps less optimistic view of college education's effect on workers' productivity gains, in which the college premium is created less by the instructors than by the admissions office. Pioneered by economists Michael Spence, Kenneth Arrow, and Joseph Stiglitz, the signaling explanation of the college premium says that college completion has less to do with the attainment of certain skills or knowledge, and more to do with a credential that points to, say, competence, intelligence, timeliness, or motivation, among other attributes — traits that are valued by employers but difficult to assess directly. Employers may view a degree as a good, simple screening mechanism for these unobservables, and its primary usefulness, under this explanation of the wage premium, lies in its ability to provide a clear signal of traits that the worker may have already had before setting foot on campus.

If human capital explains the returns to education, the best societal response will likely be to invest in more college education, so that the workforce is more productive. Wellesley College professor of economics Philip Levine says that while there may be some signaling in labor market outcomes, a “very large component of labor market outcomes is the human capital attainment associated with education,” from preschool and kindergarten right through college, so the United States should invest more in education across the board. “The skills that are required by the modern workforce involve more sophistication than what a manual labor job would require,” he points out.

A degree provides requisite sophistication, meaning graduates gain that additional human capital they otherwise would not have without the degree. “The fact that this means more people need to go on to get more education is a market outcome.”

Conversely, if signaling explains the returns to education, the societal response should be to invest less in higher education, so that people don't find themselves trapped in expensive and time-consuming arms races for higher and higher levels of credentials. As Labaree notes, college is expensive, both in dollars and in time. “One issue is the huge investment in time at the age when you're actually going to be a productive member of the workforce. But the other problem is that as you move up the scale of education, from elementary school to college, it costs more and more to educate you.”

Ana Hernández Kent, a senior researcher for the Institute for Economic Equity at the St. Louis Fed, points to research on degree requirements during recessions to make the case that there is, in fact, a large amount of signaling going on in labor markets. “In times when the labor market has a little more slack, qualifications like education begin to be required more and more.” But in a tighter labor market, she notes, “Employers tend to drop those educational qualifications for the exact same jobs. So is it really the education that employers are interested in?” she says. “Or is it really a skill set for which education is acting as a proxy? I think workers would be better served across the board if employers could figure out what skills they need for the job instead of trying to use education as a proxy.”

It may also be the case that colleges are simply providing the skills education that employers themselves used to provide. Students are mostly choosing to major in areas that employers are interested in: The number of degrees awarded in fields like computer science and law enforcement has shot up in recent years, while the liberal arts have diminished in their prominence. In his 2012 book, *Why Good People Can't Get Jobs: The Skills Gap and What Companies Can Do About It*,

University of Pennsylvania Wharton School professor of management Peter Cappelli argued that the so-called skills gap between the needs of the employer and the abilities of the applicant pool exists in large part due to employers not investing in the employee training that was fairly commonplace in the recent past. That said, an employee spending all of his or her career with the same employer was also fairly commonplace in the recent past — that's far less common today, Capelli noted.

“What's interesting about training in this context is that there's specific training versus general training,” Levine explains. “If your employer teaches you how to use the firm's proprietary software, and you're never going to be able to use that anywhere else, your employer should pay you for that specific training.” And they have an incentive to do so, he notes.

“But with general training,” he continues, “if you can learn how to code with, say, Python, your employer is never going to train you for that because they'll just train you, and you'll leave to use those skills elsewhere.” It follows that college degrees may very well be the most efficient mechanism by which to match the labor supply of workers with the demand for labor from employers, if firms are, by and large, primarily looking for general training.

A SHIFT AWAY FROM DEGREES?

What's clear amid all this discussion is that there is no easy answer. No one can say for sure whether the college wage premium is mostly driven by college graduates' human capital acquisition while getting their degrees, or whether it is mostly driven by signaling difficult-to-observe characteristics. By most economic accounts, both explanations drive the college wage premium in differing capacities and to differing extents. But regardless of which explanation dominates, there might be some career paths emerging that shelve degree requirements. Opportunity@Work, for example, is a nonprofit that advocates firms hiring non-college educated workers who are “skilled through alternative routes” (STARs), such as military service, boot-camps, micro-credential programs,

community colleges, trade schools, and apprenticeships. Citing “prohibitive costs,” “crippling debt,” and “education deserts” (locations where there is limited access to college), the organization states on its website, “By excluding candidates without four-year college degrees, employers overlook millions of Americans who are [STARS] and have the valuable skills, talent, and drive to succeed in today’s workforce.”

Similarly, Microsoft-owned LinkedIn started a new initiative in March called Skills Path, with the tag line, “A new way to help companies hire for skills.” In the social media platform’s press release, Hari Srinivasan, a LinkedIn vice president, wrote that “by taking a skills-based approach to opportunity we can remove barriers for candidates that might not have the degree or network, while also increasing the size of employer talent pools, often letting them pinpoint quality applicants for hard-to-fill roles.”

If a four-year college degree nowadays signals for many jobs what a high school diploma used to signal — maturity, competence, and drive, among other desirable traits — alternative routes could, at least in theory, signal those same traits at a lower individual and societal cost while potentially allowing skilled, but non-college educated, people to attain well-paying jobs for which they are otherwise qualified. Among those routes are apprenticeships and similar job-based programs in which employers can observe workers’ traits before moving them up. A recent National Bureau of Economic Research working paper about STARS by Peter Blair of Harvard University’s Graduate School of Education, along with co-authors, found that of the 16 million non-college educated workers with skills for high-wage work, 11 million workers, whom they termed “Rising STARS,” are employed in middle- to

low-wage work. The authors concluded that “there is a potentially vast pool of [non-college educated] skilled labor for US employers.”

Is anyone expanding hiring from this pool? According to January 2020 data from Glassdoor, a job search website, firms like Google, Apple, and Hilton have recently dropped degree requirements for some jobs. Kenneth Frazier, the CEO of Merck & Co., a Kenilworth, N.J.-based pharmaceutical company, told the *Wall Street Journal* in May, “It’s really important for us to recognize that because people haven’t had an opportunity early in their lives, it doesn’t mean that they can’t make a real contribution to your company.” Likewise, IBM’s chief human resources officer, Nickle LaMoreaux, noted in an interview for the website of the management consulting and polling firm Gallup that half of IBM’s jobs as of April did not require a degree. “When you break down what people actually do every day, whether it’s software development, or digital design testing, or security, or even artificial intelligence, you have to ask if that role needs a four-year degree or it’s a set of skills that’s needed,” she said.

Yet in the immediate future, there isn’t any indication that most companies are dropping four-year degree requirements, even if some are. With 55 percent of highly paid jobs going to workers with bachelor’s degrees, a college education is still probably the best decision for well-prepared students. From a societal perspective, though, the question remains whether this burden on individuals is equitable and socially efficient.

Moreover, society might want to collectively invest in college for reasons that are not explicitly tied to labor market outcomes. Beyond human capital attainment that results in productivity gains, and beyond a signaling mechanism that helps firms

hire efficiently, higher education of course has higher purposes in the eyes of its defenders. Columbia University professor of American Studies Andrew Delbanco is one of many who has made this case, arguing in his 2012 book *College: What It Was, Is, and Should Be* that the American university’s purpose is to aid students in self-discovery and to teach them how to think. For Delbanco, college ought to be “an aid to reflection, a place and process whereby young people take stock of their talents and passions and begin to sort out their lives in a way that is true to themselves and responsible to others.” Additionally, college-educated people are more likely to vote and to get married, and are less likely to commit crime, all of which might be socially desirable behaviors and outcomes. (Of course, the line of causation might run in the other direction: People more inclined in those directions might also be the ones most likely to opt for college.) Insofar as higher education carries some nonpecuniary benefits, society may want to continue investing significantly in college education and to encourage more people to get degrees.

Any considerations as to what college’s role should be in labor markets — and indeed, as to what college’s role should be in society at large — will involve coming to terms with real financial and social trade-offs, whether the United States as a whole invests more, invests less, or continues to invest the same amount in higher education. Making informed decisions about degree requirements and creating an education system that better supports workers’ future outcomes are likely going to be concerns of broader relevance and public discussion as policymakers and citizens alike seek better labor markets that work for all. **EF**

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BY COLTON LAPP

When Will Firms Issue Digital Currencies?

Jonathan Chiu and Tsz-Nga Wong.
“Payments on Digital Platforms: Resiliency, Interoperability and Welfare.” *Journal of Economic Dynamics and Control* (forthcoming).

Over the last several years, public awareness of digital currencies has grown rapidly. In the last year, for example, more than 10 percent of Americans have reportedly traded or bought cryptocurrencies, in part fueled by increased institutional adoption and public attention in the media. This increased engagement has captured the attention of both the general public and central bankers alike.

Alongside the increased adoption of decentralized cryptocurrencies, some companies in the United States have also received attention for their own ventures into alternative forms of digital payment systems. Most notably, Facebook made headlines in 2019 when it announced plans to launch its own digital currency — Libra — but ultimately decided to put the project on hold after receiving criticism from both Democratic and Republican senators.

Outside of Facebook, however, the United States has generally seen limited implementation of platform-issued currencies. This stands in stark contrast to other countries, such as China, where some nonbank, platform-centered firms like Alibaba and Tencent have successfully created their own digital currency systems that have been widely adopted by the public. This divergence raises a question: What differences between China and the United States have led to such different outcomes in platform-issued currency adoption among these nonbank companies?

In an article titled “Payments on Digital Platforms: Resiliency, Interoperability and Welfare,” forthcoming in the *Journal of Economic*

Dynamics and Control, researchers Jonathan Chiu of the Bank of Canada and Russell Wong of the Richmond Fed sought to answer this question by modeling a firm’s choice between issuing a digital token system and accepting cash. In their model, implementing a digital token system has both benefits and costs that depend not only on the properties of the firm, but also on the broader economic context of the country in which the firm is operating. Looking at the world through their model, it becomes clear why Alibaba, a large online retailer in China, decided to implement its own digital payment system while Amazon has yet to do the same in the United States.

In the authors’ model, many possible downsides are associated with setting up a digital payment system. Not only is it expensive to develop and maintain the infrastructure of a new currency system, but there are also country-specific regulation constraints that can stymie project implementation. Consumer acceptance of the system may also be low if users do not believe that the company will be able to maintain the value of the currency — whether due to cybersecurity threats or simply poor financial soundness.

If a firm is able to overcome these barriers, however, there are several benefits related to implementing a new digital payment system. The main benefit to the firm is the revenue earned via seignorage — that is, the difference between the face value of the created currency and the cost of maintaining that currency system. Moreover, firms may also benefit by building customer loyalty as well as harvesting transaction data.

Consumers may also prefer to use a digital token system, depending on specific macroeconomic conditions.

For example, if the cost of holding cash is high, which might occur in an economy with high interest rates, then holding wealth in a firm’s digital currency can mitigate the effects of inflation. Furthermore, if a company’s market share is large enough, or if the company provides unique access to certain products, consumers may have little choice but to participate in the digital token system in order to gain access to these goods.

The researchers noted several findings. First, for a token-issuing firm, it is not possible to increase profits by accepting cash alongside the issuance of tokens because doing so would reduce token demand. In addition, from a social welfare perspective, the authors showed that a firm may make a suboptimal decision when deciding whether or not to create a digital token system. This finding results from the fact that as the firm makes its decision, it does not take into account the potential benefits or costs to society of its actions. For example, a firm might not consider the broader implications that digital payment adoption could have on the effectiveness of a central bank’s monetary policy, among other consequences.

Finally, the authors considered the effects of implementing traditional banking-style regulatory measures on the nonbank companies that issue digital currencies, such as reserve requirements or deposit insurance. They found that for these firms, these measures would be ineffective and welfare reducing, as they would dissuade some firms from issuing currencies when it would otherwise be socially beneficial for them to do so. The authors suggested that in the future, their model of digital currency issuance could be extended in a variety of ways depending on the research question of interest. **EF**

BY JOHN MULLIN

Genghis Khan, Trade Warrior

His Pax Mongolica connected Europe and China, leading to exchanges of technology and culture

It was no coincidence that Marco Polo's famed trip to China came at the Mongol Empire's peak in the 13th century. His party of Venetian merchants traversed an overland route between the Middle East and China on what would much later be called the Silk Road. Their passage over the perilous terrain would scarcely have been possible without the system of order, referred to by historians as Pax Mongolica, that the empire had imposed across central Asia.

Polo's party traveled under the sponsorship of Mongol ruler and Yuan dynasty emperor Khubilai Khan, the grandson of the Mongol Empire's founding ruler or "khan," Genghis. The sponsorship took the form of an extraordinary passport. According to Polo's account, they had been given a "Tablet of Gold on which was inscribed that [they] should be supplied with everything needful in all the countries through which they should pass — with horses, with escorts, and, in short, whatever they should require." With this tablet, Polo's party was able to draw on the substantial infrastructure that the empire maintained along central Asian trade routes.

Apparently, the Venetian merchants were far from alone in their use of this infrastructure. By the time they reached Cambaluc, the winter capital of the Yuan dynasty at the site of modern-day Beijing, they discovered that numerous European merchants had preceded them. The vast suburbs of Cambaluc, according to Polo, "lodge the foreign merchants and travelers, of whom there are always great numbers who have come to bring presents to the Emperor, or to sell articles at Court, or because the city affords so good a mart to attract traders." Separate inns were provided for merchants from different parts of the world, including "one for the Lombards, another for the Germans, and a third for the Frenchmen."

These direct contacts between Europe and China appear to have been a wholly new phenomenon, something that had not occurred before Pax Mongolica. "Prior to this period, we don't have evidence of direct trade between Europe and China," says anthropologist Jack Weatherford, author of *Genghis Khan and the Making of the Modern World*.

It is hard to overestimate the historical significance of Pax Mongolica. Its establishment had come at a terrible price. In conquests that expanded the Mongolian Empire to China in the East and to the Danube River in the West, the Mongol armies may have killed upward of 40 million people. Yet Pax Mongolica created a relatively stable environment for the development of global trade and the cross-fertilization

of cultures and knowledge that came with it. Spices, tea, porcelain, and silk moved west, along with numerous Chinese technological innovations. Gold, medical manuscripts, and astronomical tomes headed east. These new exchanges had enormous implications and have been judged by one historian as the "onset of global history."



Mongol emperor Genghis Khan

GENGHIS KHAN, ADMINISTRATOR

Genghis Khan, born under the name Timüjin, was an unlikely candidate to unify the warring Mongol tribes of his homeland, much less found a vast empire. The future emperor was the son of an outcast family — a family abandoned by its clan to die on the steppes. Yet it appears that he came to believe that he was divinely destined to unify the world — all the land under Tengri, the sky god of his shamanistic religious tradition. In an ascent marked by incredible political and military savvy, he proceeded to defeat a long string of ever more powerful enemies.

What is perhaps equally incredible is that this man with no formal education and an extremely limited understanding of the outside world would prove to be an adept administrator. Breaking with Mongol tradition, Genghis was a strong adherent of meritocracy. To overcome intra-Mongol tribal rivalries, he organized his army and much of the remaining population into groups of 1,000. He tended to promote and demote based on performance, with little or no regard to tribal connections.

A fundamental problem Genghis faced was the growing numerical mismatch between the conquerors and the conquered. "He had an army of 100,000 and he ruled over hundreds of millions of people," says Weatherford. "There is no way you could rule over that many people solely by force with such a relatively small army. It's just not possible." To complement his military power, he relied on non-Mongol advisers to provide the know-how and manpower to administer his expanding empire. As a means of countering local

IMAGE: NATIONAL PALACE MUSEUM, TAIPEI, TAIWAN.

sources of power in conquered territories, Genghis and his successors frequently brought in advisers from other lands. Such was the case in China, where Khubilai relied heavily on Muslim advisers from central Asia out of distrust for the indigenous Chinese Mandarin class.

One of the great strengths of Genghis and his immediate successors was their openness to new ideas. Without their own systems to draw upon, the Mongol leaders proved willing to apply newfound knowledge and techniques. They combined various systems, generally favoring pragmatic solutions. In the first stages of the empire, the Mongols' gains from conquered territories came from the spoils of victory (war booty, military requisitioning, and tribute). By Khubilai's time, however, they had developed a much more systematic tax system. The collection and allocation of war gains and taxes over such vast territories required massive record keeping, so their clerks used the abacus for calculations and drew on innovations from Arabic and Indian mathematics (such as the number zero and negative numbers). Effective administration also required the ability to accurately mark time across far-flung territories that used different calendars, so Khubilai established the Academy for Calendrical Studies and a printing office that mass produced calendars.

The Mongol empire was full of juxtaposition. In their military conquests, the Mongols countered resistance with ruthless violence. Yet after establishing control, their rule over conquered territories could be more nuanced. In the "Yasa" legal code that Genghis promulgated to complement customary Mongol law, the death penalty was ubiquitous. Acts of robbery and treason were punished with severity — but the Yuan legal code that the Mongols established in China had only half the number of capital crimes as the Song dynasty code that it supplanted, and the death penalty appears to have been used only sparingly on civilians.

The Mongol conquest and occupation were devastating for Chinese agriculture. Large parts of the rural population were killed or enslaved, and many of the remaining farmers were subject to capricious taxation and the transformation of their farms into grazing and hunting grounds. Yet some of Khubilai's policies, such as the provision of social insurance against crop failures and natural disasters, suggest a real concern for the welfare of his subjects. According to Marco Polo's account, "if the people are afflicted by any dearth through unfavorable seasons, or storms or locusts, or other like calamity... no taxes are exacted for that year; nay more, he causes them to be supplied with corn of his own for food and seed."

TRADE PROMOTER

The Mongols relied heavily on trade, even before the establishment of their empire. As a nomadic people whose sustenance relied on herding and hunting, they had little in the way of industry. Although they crafted some basic items, it appears they had few weapons makers, potters, or weavers.

They traded frequently with their neighbors in China and central Asia, primarily offering animals and animal-based products in exchange for craft articles and grain.

With the growth of their empire, the Mongols' fondness for trade was enhanced by the method they used to divide the spoils of conquest. Their traditional system of shares, called "khubi," was formalized by Genghis Khan. Under the system, each member of the ruling family was entitled to a share of wealth from each part of the empire. The shares were paid in kind: Mongols who ruled in Persia would send spices, steel, jewels, and pearls to their counterparts in China, while the rulers in China would send porcelain and medicine to Persia.

The transport of war booty was not limited to goods, as the Mongols recognized the usefulness of having people with knowledge and skills at their disposal. Even in cases where the Mongols would massacre most of the people in a conquered territory, the Mongol armies would round up craftsmen, translators, doctors, astronomers, and mathematicians to be allocated across the empire.

The khubi system encouraged trade, as the recipients of in-kind payments would naturally wish to trade at least some of their allocations for alternative goods. Combined, the allocation system and its ripple effects on trade created a constant flow of goods and people between the Middle East and China. Even during periods of intense conflict among different parts of the empire (and there were many), the flow of goods was usually not interrupted for long. The shared interest in the allocation of war booty and the exchange of goods through trade appears to have outweighed competing interests.

The Mongols also sought to encourage trade by elevating the societal status of merchants, offering them strategic inducements and providing them with a vast infrastructure and a good measure of security. The Mongols' attitude toward merchants stood in stark contrast to that of the Chinese, whose social hierarchy prior to the Mongol-ruled Yuan dynasty ranked merchants just one step above robbers. The Mongols officially raised the status of merchants in China to the highest level of all professions, just below government officials. "The Chinese gradually acquiesced to Mongol practices," says Morris Rossabi of the City University of New York, who has written extensively about Mongol history. "That is, they accepted the idea of merchants, and the status of merchants rose during that period and China never went back. During the Ming dynasty, after the Mongols left, merchants became more and more powerful and respected."

Genghis Khan would often offer highly favorable terms in his direct dealing with merchants — and his son and immediate successor, Ogodei, was even more generous. "When a merchant came to him, Ogodei would pay them double, triple what they asked for," says Weatherford. "He did that because he was trying to encourage trade." A further encouragement for merchants was the granting of special passports that

GENGHIS KHAN AND HIS TIMES

1162: Traditional birth year of Genghis Khan (born with the name Temüjin)

1163: Construction of Notre-Dame Cathedral in Paris begins

1201: The Incan ruler Manco Capac oversees construction of the city-state of Cuzco in modern-day Peru



Notre-Dame de Paris Cathedral

1206: After years of conflict, an official meeting of Mongol tribes proclaims Temüjin to be Genghis Khan

1215: Magna Carta is signed by King John of England

1227: Genghis Khan dies after a series of military conquests that stretch the Mongolian Empire to parts of northern China in the East and to the Caspian Sea in the West. At Genghis' instruction, the empire is subsequently split into four Khanates, with his son Ogoidei presiding over them as the Great Khan

1229: Sixth Crusade under excommunicated Holy Roman Emperor Frederick II captures Jerusalem

1240-41: The westernmost Khanate, known as the Golden Horde, invades Eastern Europe, taking Kiev, Cracow, and Liegnitz. Crossing the Danube, the Mongols begin raids near Vienna

1260: Khubilai Khan becomes the Great Khan

1271: Khubilai Khan proclaims the beginning of the Yuan Dynasty in China

1275-1292: Marco Polo resides in Khubilai's court



Khubilai Khan

1294: Khubilai Khan dies. His successors lack his political savvy. A series of plagues and natural disasters exacerbate dissent within the empire, and large-scale rebellions erupt in the 1340s

1368: The Ming Dynasty (1368-1644) is established after the last of Khubilai's nine successors is driven out of Beijing

provided the holders with protection, accommodations, transport, and exemption from local taxes and duties. Marco Polo's golden tablet was the highest level of these.

NETWORK BUILDER

The Mongols developed a vast system of roads, canals, and postal stations. They originally did so for military reasons, but the resulting network eventually facilitated trade. The postal system, known as the Yam system, was a sort of medieval pony express with stations positioned at intervals of 20-30 miles. At each station, an "arrow messenger" would mount a fresh horse and ride to the next station at a full gallop. According to Marco Polo's account, "at each of these stations used by the messengers, there is a large and handsome building... with fine beds and all other necessary articles... on all these posts taken together there are more than 300,000 horses kept up... and the great buildings... are more than 10,000 in number."

The Yam postal system was devised mainly for the benefit of the Mongols' communications system, but they also extended it to merchants. For passport-holding merchants, such as Marco Polo, the Yam system provided indispensable support.

Yet the Yam system's value to merchants hinged on the security that the Mongols could provide along the routes. "The big obstacle to open trade was security, because the trade routes crossed a lot of dangerous territory," says economist Kevin O'Rourke of New York University Abu Dhabi, co-author of *Power and Plenty: Trade, War, and the World*

Economy in the Second Millennium. "One of the main reasons the Mongols were so beneficial to trade was that their unification of large chunks of Eurasia provided people with security." Indeed, the Mongol military operated and maintained troops along the entire Yam system.

FINANCIAL INNOVATOR

The Mongols relied extensively on foreign merchants as agents to conduct their business. The trade and money-lending partnerships they formed were called the Ortoq system, a term that derived from the Turkic word for "partner." Ortoq partnerships were similar in many respects to modern limited partnerships because a principal's liability was capped at the amount of the original investment.

Ortoq partnerships arose relatively early during the reign of Genghis, and by the time of Khubilai's reign, most Mongol-ruled territories that bordered the sea had begun to employ the partnerships for maritime trade. This coincided with Khubilai's massive expansion of China's maritime fleet. "The Ortoqs helped reduce risks in case something went wrong," says Rossabi. "If one merchant financed a whole venture, and the caravan or ship didn't make it, he'd be wiped out. But if you spread the risk, no one would suffer dramatically."

Women played a dominant role in the Mongol side of the Ortoq partnerships. "Mongol men were not supposed to be concerned with the accumulation of wealth. They were not supposed to be concerned with anything beyond warfare, religion, and hunting animals," says Weatherford. "Women handled money and wealth and the accumulation of goods."

And therefore, the women were involved with the trading system of merchants.”

The Ortoq system helped Mongol women convert the spoils of war into money, which they used to buy luxury consumption goods or lend at interest. Lending money must have been particularly attractive, since, unencumbered by the usury laws of the Islamic and Christian worlds, the Ortoqs reportedly lent money at a compound annual rate of 100 percent.

Khubilai greatly expanded the use of paper money in China. The currency issued under his reign — the Zhongtong Chao — was ostensibly backed by silver, and it kept its value in the early years after its introduction. Marco Polo observed that the currency was accepted throughout the empire, stating, “Nobody, however important he may think himself, dare to refuse [it] on pain of death.” But the evidence suggests that additional measures were required to maintain its value. In the early years, the government periodically supported the currency by buying it back with silver. The government also used what amounted to exchange controls. According to Marco Polo’s account, “All merchants arriving from India or other countries, and bringing with them gold or silver or gems or pearls, are prohibited from selling to anyone but the Emperor.” Occupants of the empire were similarly prohibited from buying and selling silver among themselves. The currency’s value fluctuated over time with the forces of supply and demand, ultimately depreciating greatly during the later years of the Yuan dynasty as the regime’s fiscal situation deteriorated.

THE LEGACY OF PAX MONGOLICA

There is a broad consensus among scholars that Pax Mongolica transformed world history. The period of relative stability, which spanned roughly 1250-1350, allowed for an unprecedented exchange of goods and ideas. In *Power and Plenty: Trade, War, and the World Economy in the Second Millennium*, O’Rourke and his co-author Ronald Findlay of Columbia University go so far as to argue that “globalization... began with the unification of the central Eurasian landmass by the Mongol conquests.”

Many Chinese innovations had made their way from China to the Middle East and Europe prior to Pax Mongolica, silk and porcelain among them. The Byzantines had obtained silkworm eggs and begun their own silk production as early as the sixth century, and recent archaeological evidence has discovered Chinese porcelain on the

Iberian Peninsula dated to between the ninth and 11th centuries. But there is no evidence of direct contact between Europe and China prior to the 13th century. In *The Mongols and Global History*, Rossabi posits that “The thirteenth century witnessed the first direct and personal contact between Europe and China.”

Pax Mongolica changed the world in many ways. It introduced new goods to Europe, including fabrics such as satin, damask silk, and muslin. It also allowed for the exchange of technology. With Mongol encouragement, Muslim doctors gained knowledge of Chinese pharmacology, while Chinese doctors learned surgical techniques from their counterparts in the Middle East. On the less benign side of the ledger, the Mongol introduction of gunpowder, a Chinese invention, to the Western world accelerated the history of European warfare. Increased long-distance trade also facilitated the transmission of deadly diseases, such as the bubonic plague.

Yet perhaps the greatest consequence of Pax Mongolica stemmed from the enormous profits that it conferred on successful traders. Trade, whether across land or sea, was a high-risk, high-reward venture. *Power and Plenty* recounts a story of how a single successful shipment compensated a merchant for the loss of several other ships. The potential for outsized gains created a large incentive to lower trading costs and risks through the establishment of new trade routes. By whetting the European appetite for trade, Pax Mongolica encouraged the explorations of Vasco de Gama and Christopher Columbus, which served as springboards to the modern world — with all its breakthroughs and destruction.

But the effects of Pax Mongolica were hardly symmetric. Europe — a commodity exporter that lagged China and the Middle East technologically — gained greatly from the exchange of ideas with China. And although the Mongols killed many knights in Hungary, Europe’s location largely spared it from the brunt of the Mongol armies. Conversely, China’s gains from the exchange of ideas were relatively modest, and it bore a much heavier burden from the Mongol conquest and occupation. Moreover, China’s Mongol problem would endure well after the end of Mongol rule in China. As late as the 16th century, Ming dynasty emperors continued to anxiously devote substantial resources to counter the perceived threat from the northern steppes. So, while Pax Mongolica encouraged Europeans to look outward, the continuing Mongol threat compelled the Chinese to look inward, reinforcing a pattern that would have profound consequences for global history. **EF**

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AT THE RICHMOND FED

BY ERIKA BELL AND STEPHANIE NORRIS

Rural America Week

About a quarter of the population of the Fifth District live in rural counties. Rural communities and small towns face a distinct set of challenges to economic opportunity and employment growth. As part of a larger set of initiatives to address these issues, the Richmond Fed hosted its second annual Rural America Week on Oct. 4-6. Bank leaders and experts from across the nation shared ideas, successes, opportunities, and solutions during the virtual event. Rural America Week is one of a number of Richmond Fed events intended to connect a broad group of rural community leaders, policymakers, and representatives from financial institutions and foundations to collaborate and learn from one another.

The week's program began with a live virtual pitch session for the Richmond Fed's Investment Connection program. (See "Investment Connection," *Econ Focus*, First Quarter 2021.) Hosted by Richmond Fed Community Development Regional Manager Peter Dolkart, the program featured representatives of five nonprofits in the Fifth District, who presented community and economic development projects in rural communities. Presenters outlined project objectives, requirements, and costs in the hope of gaining funding from public and private funders in attendance. The initiatives addressed increasing affordable home ownership in South Carolina and Virginia, increasing financial education and entrepreneurship for K-8 students in North Carolina, supporting community revitalization in West Virginia, and improving healthy food access in Maryland.

One theme of this year's Rural America Week was the value of collaboration in building locally driven solutions. In a panel discussion moderated by Richmond Fed Regional Executive Renee Haltom, three community leaders representing different perspectives on rural economic development — Sara Chester, co-executive director of The Industrial Commons in Morganton, N.C.; Laschelle McKay, town administrator of Leonardtown, Md.; and Jay Langston, executive director of the Shenandoah Valley Partnership in Harrisonburg, Va. — discussed strategies for addressing economic challenges. Panelists cited the importance of understanding and leveraging community assets and engaging a broad range of stakeholders to develop a shared vision for change. Each panelist emphasized the importance of fostering partnerships among local governments, institutions, and businesses as critical in his or her approach to building momentum on economic development initiatives. Chester offered an example of the importance of collaboration from her organization's Work in Burke program, which educates young people about career

pathways available through partnerships with local businesses. Rather than viewing each other as competitors, Chester noted, the businesses in the program work together toward the common goal of educating and retaining the next generation of workers.

Participants in Rural America Week also considered the crucial role of education in rural communities. Speakers provided updates on several issues explored in the Richmond Fed's *District Dialogues* virtual series that focused on educational disparities, and they discussed how educators continue to address learning loss, what learning

looks like in the midst of an evolving pandemic, and learning beyond high school in rural places. Rebecca Evans, a kindergarten teacher from rural Hampton County, S.C., and Anthony Swann, a sixth grade instructional coach in Franklin County, Va., shared challenges, solutions, and hopes for the future. Evans noted some things she is seeing in her young students as a result of living through a pandemic. "I already see so much progress with the flexibility of these students," she said. "As these children grow up and enter the workforce, flexibility is a positive. Just being able to monitor and adjust is a skill that they did not know they were developing." Ann Macheras, group vice president in the Richmond Fed's Research Department, summarized, "At the heart of economic opportunity, it takes skills, education, and jobs so that individuals can earn a living and support further growth for themselves, their families, and their communities."

The capstone of the education discussion was an interview with Danette Howard of the Lumina Foundation, a nationwide private foundation dedicated to creating learning opportunities for all beyond high school. She offered promising strategies for increasing access and success for rural students, including increasing dual enrollment participation, supporting community colleges as anchor institutions, offering holistic student supports, and embracing remote learning and work.

Throughout the Rural America Week sessions, speakers touched on key themes of championing collaboration and partnerships, leveraging local assets, and focusing on place-based initiatives. During the Richmond Fed's Investing in Rural America Conference in the spring, attendees will hear insights and ideas from rural experts on topics like nonskill barriers to labor force participation and the future of workforce development in rural communities. The event is planned for March 30, 2022, in person, in Greensboro, N.C., or attendees may participate virtually. EF

"As these children grow up and enter the workforce, flexibility is a positive. Just being able to monitor and adjust is a skill that they did not know they were developing."

Edward Glaeser

On urbanization, the future of small towns, and “Yes In My Back Yard”

Harvard University’s Edward Glaeser, considered by many to be the foremost economist of cities and of the forces influencing their development, is known for defending the role of cities as places where businesses and residents can exploit the benefits of social and economic interactions.

As a teenager, he lived on the Upper East Side of New York during the *Bonfire of the Vanities* era. His eventual specialization in urban economics was influenced, he says, by his growing up in the city during its times of crisis and recovery. “My childhood was shaped by the arc of New York City during the ’70s and ’80s, first as a period of startling decline as crime rates exploded and the city teetered on the brink of bankruptcy, and then its remarkable comeback,” he remembers. “And it was hard as a child not to wonder at this amazing variety of things that were happening in the city.”

Glaeser was promoted to chair of Harvard’s economics department in July. He has authored scores of journal articles and book chapters and is a member of the editorial board of five journals of urban or regional economics. He is the author or editor of 12 books, many of them on the economics of cities or on housing policy. His most recent, *Survival of the City: Living and Thriving in an Age of Isolation*, written with Harvard colleague David Cutler, was published in September.

David A. Price interviewed Glaeser by phone in September 2021.



EF: In your new book, *Survival of the City*, you argue that technological changes in the postwar period were mostly “centrifugal,” leading people and companies to move away from urban cores, while technological changes in the 21st century have been “centripetal,” leading to more concentration in urban cores. Please explain.

Glaeser: I see urban growth as almost uniformly a dance between technologies that pull us together and ones that push us apart.

Technologies of the 19th century, like the skyscraper — which is really the combination of a steel frame and an elevator — the streetcar, the steam engine, all of these things enabled the growth of 19th century cities. They brought people together. This was a centripetal age.

In the mid-20th century, we had technologies that were major jumps forward in transportation cost. In transportation technology, like the car, and in technology for transporting ideas and entertainment — television and radio — these were centrifugal forces that basically flattened the Earth and made it easier to live in far-flung suburbs or even rural areas.

Those centrifugal technologies were the backdrop for New York’s decline during the 1970s. They were the backdrop for the exodus of people from dense cities that had been built around streetcars and subways and to suburbs that were built around the car.

But then in the late 20th century and early 21st century, the tides turned again. And it was somewhat surprising. With this shift came a vision in which the rise in these forms of information technology would lead the knowledge workers that still existed in cities to follow the path

of industrial workers and essentially deurbanize. Knowledge workers would work remotely from electronic cottages.

But for most of the last 40 years, that hasn't been correct at all. That hasn't been happening in cities. We've started to see the electronic cottages become a force during the pandemic, and suburbanization has continued, but downtowns are vastly stronger than they were in the 1980s. And I think the primary reason is that globalization and new technologies have radically increased the returns to being smart, and we are a social species that gets smart by being around other smart people. That's why people are willing to pay so much to be in the heart of Silicon Valley and why they're willing to pay so much for downtown real estate in Chicago or New York or London.

EF: What does the future of small towns look like after the pandemic?

Glaeser: I think that's going to be a tale of two towns. If you are a small town like a college town, a place with high levels of amenities and beautiful scenery where rich people want to go, I think that the combination of the ability to do work remotely and perhaps some enduring pandemic fears means that you are as strong as you've ever been, if not more so. These places are poised to benefit.

Take your Silicon Valley startup with 15 smart, hungry young people. Do we truly think in five years these people are just going to be Zooming it in from their suburban bedrooms? That sounds totally implausible to me. That sounds like a totally different work model that will lack all the energy and high quality in-person connections you get from being in the same room as one another.

But on the other hand, are these 15 people going to decide, "Well we all love skiing, we're tired of paying Silicon Valley prices, should we relocate to Vail?" Or say, "We don't want to pay taxes, let's relocate to Austin." Or,

Edward Glaeser

■ PRESENT POSITION

Fred and Eleanor Glimp Professor of Economics and Department Chair, Harvard University

■ SELECTED ADDITIONAL AFFILIATIONS

Director, Urban Economics Working Group, National Bureau of Economic Research; Editorial Board Member, *Journal of Urban Economics*; Board Member, Social Science Research Council; Fellow, Econometrics Society; Member, American Academy of Arts and Sciences

■ EDUCATION

Ph.D. (1992), University of Chicago; A.B. (1988), Princeton University

"We want better surfing, let's relocate to Honolulu." That feels entirely plausible to me. The technology supports the mobility en masse of these groups to some different area. Places they're most likely to relocate to are high-amenity places that will appeal to them along one of these dimensions.

These would be probably the best index right now of whether or not a place is likely to benefit: Among small towns, is it a skilled place already? Prior to COVID-19, did it do a good job of attracting large numbers of college graduates or people who had advanced degrees?

On the other hand, if you're talking about small towns in relatively low-amenity places, places that are low density, farmland, low levels of education, these places have been declining for decades, and I see little reason why the decline would be reversed anytime soon.

EF: Place-based policies — that is, policies aimed at improving specific areas — are often criticized by economists. You've argued that they may be justified for some areas of the American heartland where men have low labor force participation. Why is that?

Glaeser: I still maintain my traditional aversion to place-based policies. I have not completely gone away from it.

But I do think that the persistence of prime-age male joblessness is worrisome. If you look at the relationship in the Public Use Microdata Areas between joblessness in 2010 and joblessness in 1980, the correlation is over 80 percent. We have an enduring level of local economic dysfunction. I don't think that this makes the case for large-scale redistribution in these areas. I think there are many good reasons for being wary of that, but at the same time, I think it's necessary to think about policies that are more place-specific.

Take housing. You really don't need to subsidize the production of low-income housing in most of Texas, because they have an unfettered market that does a great job of providing lots of low-cost housing to middle-income residents. If you have Detroit, you don't want to produce more low-cost housing, because they've got an abundance of low-cost housing there. But on the other hand, there's probably a good case for doing something about low-cost housing in San Francisco or New York or Boston.

That suggests to me, at least, that you want policies like the low-income housing tax credit that subsidizes new housing construction. You want that to be spatially limited. You want it to go in areas where there's a genuine dearth of low-income housing. At the same time, you could have more housing vouchers in the areas where housing supply is elastic. You can have the right policy for the right place, which is something that America has traditionally found very difficult to do. But it's just basic economics.

Likewise, if you're going to have a large-scale employment subsidy, it makes more sense to put that subsidy into places where it will actually encourage the most employment. That's much more likely in places that start with high levels of nonemployment, like the eastern heartland.

Now, my own preference is that you make it feel relatively budget neutral and figure out other things to deliver more of to other areas. But I think we have to realize that the eastern heartland, particularly, has very specific circumstances that need distinct policies. So, when we're discussing a \$15 national minimum wage, that's fine in Seattle; we've had a whole bunch of papers on this over the past five or six years that show it won't hurt employment much. If you have a \$15 minimum wage in West Virginia, you're risking much more of an increased joblessness problem there because you're starting at a very different place.

EF: What is your view of opportunity zones as a policy in this regard?

Glaeser: We have a paper on this that does try and compare them with truly comparable areas. We're focused mainly on the effect on housing prices, which we thought would be one measure of whether things are getting better in the area. We find almost no effect from these zones on prices.

I think in general that the needs of these places are really about human capital problems rather than a lack of entrepreneurship. But the opportunity zone structures are very oriented toward more investment in physical capital, including housing and apartments and such, which does not particularly seem like the right thing to do for these disadvantaged areas. When I think about what I would like to see in a zone, it's much more focused on the human capital than the physical side.

EF: Why have major investing institutions recently started buying single-family homes in large numbers?

Glaeser: Traditionally, single-family homes were overwhelmingly owner-occupied in the U.S. More than 85

percent, I think, of homes were owner-occupied. The usual view of the housing economics community was that the agency problems involved in renting them out were huge. There are estimates that suggest that renting out for a year involves a 1 percent decline in the value of the house, or something like that, because the renter just doesn't treat it properly.

"I think we have to realize that the eastern heartland, particularly, has very specific circumstances that need distinct policies. So, when we're discussing a \$15 national minimum wage, that's fine in Seattle; we've had a whole bunch of papers on this over the past five or six years that show it won't hurt employment much. If you have a \$15 minimum wage in West Virginia, you're risking much more of an increased joblessness problem there."

By contrast, traditionally more than 85 percent of multi-family housing was rented, at least once you get to over five stories. It's much easier to manage a multi-unit building when you have one owner. One roof, one owner, because otherwise you've got the problems of coordination of the condo association or the co-op board, which can be more fractious.

So those were the things, I think, that were responsible for tying ownership type and structure type so closely together. We are starting to see that break down, which is quite interesting. I don't know if these buyers have fully internalized their difficulties with the maintenance that goes into rental houses as a long-run issue. Or if technology has changed in such a way that they think that they can actually solve that agency problem and that they can figure out ways to deal with the maintenance costs in some efficient fashion.

I'm happy to see an emergence of a healthy rental market in single-family detached housing, but I'm keenly

aware of the limitations and difficulties of doing that. So, we'll have to see how this plays out. I can't help thinking some part of it just has to be that investors are simply searching for new investment products.

EF: In *Survival of the City*, you write about development restrictions as favoring insiders, by which you mean homeowners. Homeowners might say, "Don't we want local government to be responsive to local interests?" Is this a good thing as well as a bad thing?

Glaeser: I certainly don't want local government to be nonresponsive to local interests. The problem is that local majorities are not necessarily going to take into account everyone. They won't necessarily take into account minorities, and they certainly won't take into account people

who are not in the locality right now.

As always in the case of democracy, we want something that empowers the majority, but also slightly restrains it in different ways. We want the Bill of Rights as well as the grants of power in the Constitution. And in the case of localities, I think that the idea of placing some restriction on what localities can do is quite reasonable to me.

For example, in the area of housing, you have Massachusetts Chapter 40B, which basically enables developers to work around local zoning if the locality has almost no affordable housing and if the developer is providing some low-cost units to buyers. They're able to take advantage of the state process rather than the local process for getting approval. So, you're not getting rid of all local power over zoning. But if your local power means that you produce nothing that's affordable, we're going to maintain a way for the builders of affordable housing to basically bypass you. That sort of hybrid model seems like a good one to me.

The new California law, SB 9, on speedy permitting of two-unit buildings will also be a state restriction on local power. This was the first time in many years we've had a victory for the "Yes In My Back Yard" movement — the YIMBYs. It may be a small victory, but you know, when I started thinking about this stuff in 2001, there was nothing. There was no popular movement of any form to reduce the local straitjacket on building.

EF: The famous 1961 book by Jane Jacobs, *The Death and Life of Great American Cities*, has been influential over the years in people's thinking about urban development. What was she right about, and what was she wrong about?

Glaeser: It's a wonderful, wonderful book. It's so wise in its understanding of urban neighborhoods and the street life and the ability of neighborhoods to just work and the dangers of trying to engage in planning. All of that stuff is fantastic.

Where she kind of screws up is when she gets into a discussion of how cities need old buildings. It's not that she's totally wrong, not at all. It's great for cities to have some form of inexpensive space. And in most cities, that inexpensive space comes from older buildings that have not yet been upgraded. The way that affordability is supposed to work is that you build new buildings, which are usually not that cheap, and that reduces the pressure to gentrify old buildings. So that's where affordability comes from.

But that led her to the policy view that you actually want to prevent tearing down old buildings and replacing them with new buildings. Now, if the two buildings are exactly the same size, I agree that replacing the old building with the new building will not promote affordability.

But that's not typically what developers want to do. Typically, they want

to take a short building and replace it with a tall building. And if you stop that process, as she was so instrumental in doing in the Greenwich Village historic preservation district — which was part of a great popular wave of opposition to rebuilding New York — you aren't promoting affordability, you are freezing a neighborhood in amber. In the case of Greenwich Village,

"If you stop that process, as [Jane Jacobs] was so instrumental in doing in the Greenwich Village historic preservation district, you aren't promoting affordability, you are freezing a neighborhood in amber. That's no recipe for affordable urban space that scrappy startups and young families can buy, which is how she was thinking about it."

you have created a situation in which townhouses start, at least before the pandemic, at over \$7 million. That's no recipe for affordable urban space that scrappy startups and young families can buy, which is how she was thinking about it.

That was, I think, the thing that she got most wrong. She was right in many of her ground-level observations, but economics is really helpful for thinking through the long-run implications of a policy intervention.

EF: You wrote in your book that the 1970s were a catastrophic decade for much of urban America. Why were the 1970s catastrophic for cities?

Glaeser: It's that combination of the centrifugal technologies — the fact that container ships and highways made it easy for factories to relocate to places where land and labor were cheaper, and highways made it possible for wealthier urbanites to leave for suburbs.

That process collided with the dreams of progressive mayors, like New York's John Lindsay or Detroit's Jerome Cavanagh, who were trying

to fix the very visible woes of cities. What that meant was that just at the time cities were asking businesses to pay more, asking the rich to pay more, it was becoming easier for the rich and for businesses to get out. And that's exactly what happened.

On top of that, of course, there was an inability to deal with the crime problem. That's something that I worry about today. There is a totally understandable desire to try and deal with the terrible inequities of urban life. There's a totally understandable desire to want to do something about policing and the experience that many people have with the police. But if the changes that occur either end up targeting the taxpaying members of the urban community or end up leading to a significant deterioration

in the quality of life — for example, with an increase in crime rates — that risks replaying the 1970s.

One of the reasons why I wrote the book was to emphasize that we had paths to try to reduce those inequities and could make those cities not just more functional but more humane. But at the same time, cities have to do that in a way that respects the need to continue to attract the taxpayers who ultimately fund things.

EF: You wrote that court-ordered school busing and the reaction to it played a role. In what way?

Glaeser: The way that busing got implemented was the court requirement getting rid of segregation in cities. But there was also a court ruling saying that you could not force desegregation across city boundaries.

For example, the Supreme Court decision in *Milliken v. Bradley* in 1974 said essentially that federal courts could not require desegregation across school districts. What that meant was that if you wanted to avoid busing, either for racist reasons or for some

other reasons, you could get that only by leaving the school districts — by leaving the city. And so, for thousands and thousands of parents, that's when they moved, sometimes just outside the city's school district.

If you had metropolitan-area-level desegregation efforts, that would not have created the same incentive. Or if you had something that was more like a charter school system or like a voucher school system. Anything that breaks the link between where you live and where you go to school would've been less harmful for cities. But as it was, this was yet another huge incentive for parents to get out. And a harmful one.

And ex post, if you look at the Opportunity Atlas data created by my colleague Raj Chetty and his co-authors, there was a clear and discernable break in upward mobility at the border of central city school districts across America. Opportunity jumps up if you're just outside the central city school districts as opposed to just inside it. This is a cohort that was born between 1978 and 1983, and you can see it in their adult earnings. They are also significantly less likely to be incarcerated as an adult.

EF: Winston Churchill said in 1943, “We shape our buildings and afterwards our buildings shape us.” Was he right? And if he was, what are the trade-offs in regulating architecture?

Glaeser: Yes, he was right. It's one of the greatest of all lines about architecture, absolutely.

The regulation of architecture is probably the most straightforward element of this in some sense. I have a paper with Nikhil Naik, who is a computer scientist, where we look at the connection between the appearance of your neighbor's home and your housing value. We find significant effects, and the effects are much stronger if you are on the same street as opposed to being, say, half a block away outside of the sightline. People value having nicer homes to look at, and that creates at least some scope for benefits from regulating architecture.

On the other hand, I believe people are willing to pay for architecture. Moreover, as the son of an architectural historian, I continue to be skeptical about the abilities of states to regulate architecture well. [Glaeser's father, Ludwig Glaeser, was a curator in architecture and design at the Museum of Modern Art.]

There are special cases. The vista of a city or the elegance or the magic of, for example, some streets of Barcelona or the Place des Vosges in Paris — these are magical urban spaces. And certainly, I am OK with protecting those pieces of architecture that are widely accepted to be part of the patrimony of the city.

But when it comes to building new buildings, we have to be aware that very

rarely does great architecture happen by committee. And very rarely will a zoning board be the best judge of what design is going to create joy in people for decades to come. It doesn't take much to convince me that there's a market failure in many cases, that cities are chock full of externalities, but saying that the government is actually going to make it better is a much heavier lift. I'm not sure it's here in this case.

In terms of how buildings shape us, I certainly believe that the structure of our offices shapes who we interact with and end up shaping our lives. There is evidence to show that people who are physically proximate to each other end up influencing each other. I think about, say, Bruce Sacerdote's work at Dartmouth on randomized roommates. There's an older MIT study that suggests that if you are randomly put closer to each other, you are more likely to form friendships. Plenty of evidence suggests that human proximity shapes interactions. None of this is surprising, but it is powerful and reminds us that physical proximity continues to be highly important.

For those younger economists who are reading this, I think that would be a great place to think about using, say, randomized controlled trials or something else to figure out to what extent Churchill is correct when it comes to day-to-day office life and street life and how our buildings are shaping us. **EF**



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BY TIM SABLIK

Forecasting Inflation

For policymakers and market participants, inflation can be challenging to predict

In recent months, inflation has climbed to levels not seen in a generation. The Fed's preferred measure of inflation, the Personal Consumption Expenditures (PCE) price index, increased to 4.4 percent in September 2021 compared to the same month the previous year. The last time the index reached such heights, George H.W. Bush was president, and Alan Greenspan was just finishing his first term as chair of the Fed's Board of Governors.

Maintaining price stability is one half of the Fed's dual mandate, so Fed officials have been watching this spike in inflation closely. According to the monetary policy framework adopted by the Fed last year, it judges inflation that averages 2 percent over time to be consistent with its price stability mandate. While inflation measures in recent months have come in above that 2 percent threshold, that hasn't been entirely unexpected nor unwelcome. Prices fell last year as the pandemic rippled through the global economy. Some of the current surge in prices is actually "reflation" as the economy ramps back up after months of lockdowns, and the Fed's new framework was designed to allow periods of higher inflation following periods when inflation is below target. (See "The Fed's New Framework," *Econ Focus*, First Quarter 2021.)

But Fed officials have also admitted that inflation has proven more lasting than they initially anticipated. As the economy has reopened, consumer demand has outpaced supply for some goods and services. Lingering supply chain disruptions have led to product shortages and price increases that are more than just a return to pre-pandemic trends. The challenge facing Fed policymakers now is trying to predict whether inflation will remain elevated in the

absence of monetary policy intervention or gradually return to levels consistent with the Fed's target once the shocks from the pandemic fade.

In April, when inflation pressures began emerging, Fed Chair Jerome Powell said that it seemed "unlikely" that inflation would move up in a persistent way. But at his press conference following the Federal Open Market Committee's (FOMC) meeting in September, he noted that the supply bottlenecks contributing to rising prices in many sectors "have been larger and longer lasting than anticipated."

Past experience during the 1970s and 1980s taught the Fed that it can be costly to tame inflation after it has run too high for too long. But the Fed's new framework was built with the lessons of the Great Recession in mind, which highlighted the benefits of waiting as long as possible to normalize monetary policy after an economic downturn. Choosing the right approach, then, requires some estimate of where inflation is headed — a forecast that can be quite challenging to make.

MAKING SENSE OF THE DATA

When Fed officials talk about inflation, they are taking a broader view than the typical household or business might. On its website, the Fed Board of Governors explains that "inflation cannot be measured by an increase in the cost of one product or service, or even several products or services. Rather, inflation is a general increase in the overall price level of the goods and services in the economy."

One way to look at how prices are moving across the economy is to use a price index like PCE or the Consumer Price Index (CPI). These measure the price change in a basket of goods and

services consumed by the average household. Prices for some commonly consumed items are more volatile than others and can swing indexes in either direction month to month. (See "Is Your Inflation Different?" *Econ Focus*, Second/Third Quarter 2021.)

To get a clearer sense of the general price trend in the economy, Fed officials often turn to indexes that attempt to strip out some of that volatility. Core PCE and core CPI exclude food and energy prices, for example, while the Dallas Fed's trimmed mean PCE excludes categories that experience the most extreme price changes each month. Another measure, the Atlanta Fed's sticky-price CPI, focuses on components of the CPI that change prices infrequently.

Each of these indexes shows an uptick in inflation in recent months, some more pronounced than others. (See chart.) But even these attempts to smooth out volatility can be overwhelmed by extreme events, such as a once-in-a-century global pandemic. Prices have behaved in unexpected ways over the past year. In the spring and early summer of 2021, the average cost of plywood surged before falling in September to roughly the same level as the beginning of the year. Used cars and trucks appreciated sharply starting in the spring of 2021 as the supply of new vehicles has been constrained by a shortage of computer chips and other essential components. While used car price growth seems to have leveled off, prices have not yet decreased to their previous level.

It can be hard for policymakers and economic forecasters to interpret what such incoming data points might signal about future inflation. Are they outliers that ought to be disregarded, or early signals of more lasting price pressures?

Richmond Fed economist Alexander Wolman dug into this question in a September *Economic Brief*. Rather than trying to smooth or strip out volatile components of PCE, he broke the index down into its components to see what was driving inflation in 2021. In March through June, the 5 percent of consumption categories with the largest price increases accounted for between 48 percent and 60 percent of over-all inflation. But in July, that share fell to 42 percent, suggesting that inflation had become more broad-based. He also compared the behavior of prices in recent months to the last 25 years, when inflation has been low and stable, and this too provided some evidence of a persistent upward shift in inflation.

“If a similar pattern appears in the coming months, it would represent tentative evidence that the increase in inflation is a more persistent phenomenon that reflects monetary factors and will not dissipate without an adjustment of monetary policy,” Wolman wrote.

SEPARATING SIGNAL FROM NOISE

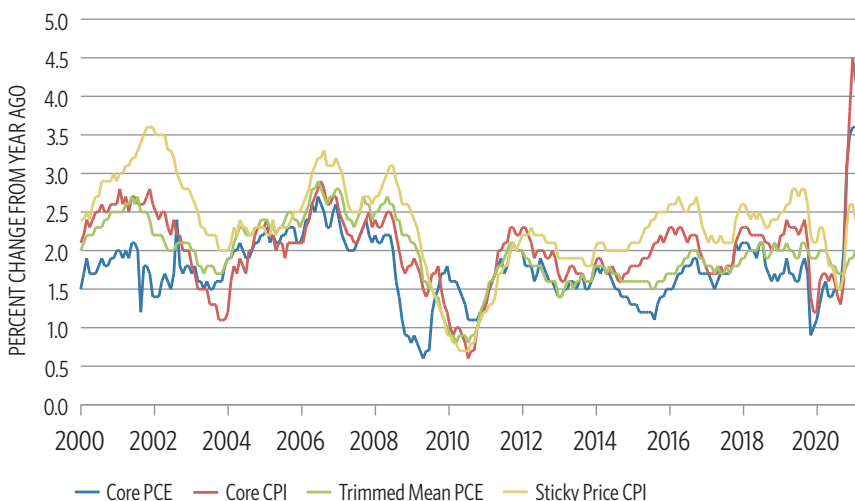
Even when comparing incoming inflation data to the past, it can be difficult to determine whether those data signal a change in the long-run trend of inflation or temporary volatility. That’s why many forecasters rely on models to help them.

There’s no shortage of ways to model the inflation process. Economic theory points to many different potential drivers of inflation, from the amount of slack in the labor market, to the level of interest rates relative to the economy’s natural rate of interest, to the size of the money supply relative to the economy’s productive capacity. But some of these variables are not directly observable, and it can be hard to know which might be driving inflation in the moment.

“Inflation is a relatively volatile process affected by many different factors, making it hard to figure out why inflation is evolving the way it is and predict its future path,” says Richmond Fed economist Paul Ho.

Inflation Has Moved Up — But For How Long?

Four measures of core inflation



NOTE: Seasonally adjusted

SOURCES: U.S. Bureau of Economic Analysis, U.S. Bureau of Labor Statistics, Federal Reserve Bank of Dallas, Federal Reserve Bank of Atlanta

One solution to this dilemma is to use a purely statistical approach that is more agnostic about the shocks hitting the economy. Signal extraction models take incoming inflation data and separate it into two components: a “signal” about where underlying inflation is trending and “noise” — temporary volatility that will average out to zero over the long run.

“If successive inflation measures are moving in a particular direction, the model will assign more weight to that being a signal about underlying inflation rather than noise,” says Richmond Fed economist Pierre-Daniel Sarte.

In a recent *Economic Brief* with fellow Richmond Fed economist John O’Trakoun, Sarte used a signal extraction model to analyze decades of core CPI and core PCE inflation data. For the 1960s through the 1980s, the model predicted underlying inflation that was high and volatile, consistent with the rising inflation of that period. For the period since the 1990s, the model treated the fluctuations of incoming PCE and CPI data as mostly noise, predicting that trend inflation

will remain stable. When looking at data from April 2021 and extrapolating it out through the second quarter, Sarte and O’Trakoun estimated a slight increase in trend inflation, although it still remained close to the Fed’s long-term 2 percent target.

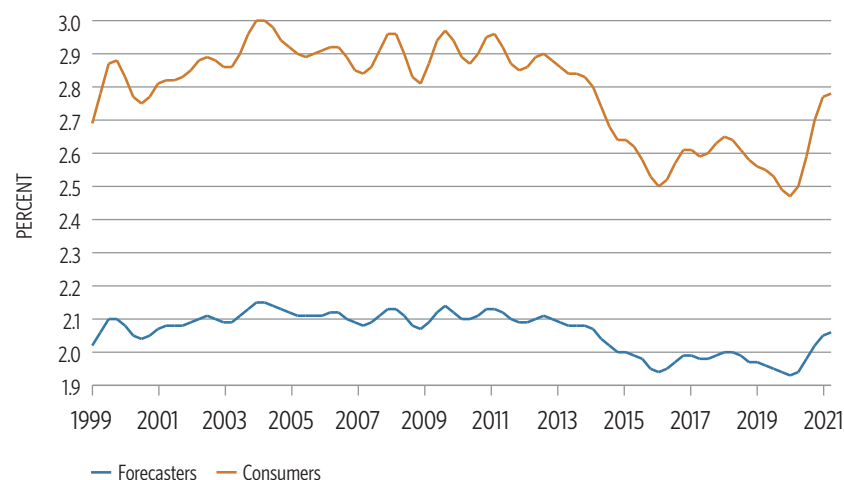
But how reliable are statistical methods at predicting sudden changes in trend inflation? Not very, according to Ricardo Reis, an economist at the London School of Economics and Political Science who studies inflation.

“If you are trying to predict inflation over the next two or three months, the statistical forecasting methods tend to do pretty well — with one exception, which is when there are big regime changes,” says Reis.

In a June *Economic Brief*, Ho wrote about the challenges that have plagued economic forecasters since the pandemic began. In such periods of high uncertainty, researchers need to decide whether the assumptions in their models are still correct, or whether volatility has simply increased temporarily. Ho argued that forecasters should clearly communicate the assumptions

Tracking Inflation Expectations

The Fed's Index of Common Inflation Expectations



NOTE: The Index of Common Inflation Expectations (CIE) summarizes the movement of 21 inflation expectations measures based on a dynamic factor model. The "forecasters" measure shows the index projected onto the Survey of Professional Forecasters 10-year-ahead PCE inflation expectations. The "consumers" measure, also known as the alternative CIE, shows the index projected onto the University of Michigan Surveys of Consumers inflation expectations for the next five to 10 years.

SOURCE: Federal Reserve Board of Governors

underlying their models. That way, even if someone disagrees with those assumptions, he or she could still learn something from the model by seeing how those assumptions influence the forecast.

LEARNING FROM OTHERS

Another option for Fed policymakers looking to understand where inflation may be headed is to seek the wisdom of the crowds. This can be particularly useful in the case of inflation because there is a self-fulfilling aspect to the public's expectations for future inflation. For example, if business owners believe that their competitors and suppliers are going to raise prices, they will raise their prices as well. If enough firms do this, then their expectations of higher prices become reality.

Because of this dynamic, policymakers pay close attention to surveys that ask households, businesses, and professional forecasters about their inflation expectations. Many such surveys exist, including the University

of Michigan's Surveys of Consumers and the Philadelphia Fed's Survey of Professional Forecasters. The Fed Board of Governors collects data from 21 different inflation expectation measures and synthesizes them into a single Index of Common Inflation Expectations. That index shows that inflation expectations have increased in recent months. (See chart.)

Despite the theoretical ties between expected inflation and actual inflation, there is also plenty of evidence that households, businesses, and even professional forecasters often guess wrong. In a 2019 working paper with Anmol Bhandari of the University of Minnesota and Jaroslav Borovička of New York University, Ho found that household expectations of future inflation were biased upward on average, and that bias increased during recessions.

In a recent article, Cleveland Fed economists Randal Verbrugge and Saeed Zaman concluded that the expectations of professional economists and business owners were more accurate predictors of future inflation than

household expectations, but a simple inflation forecasting model also proved to be just as accurate. Indeed, Sarte and O'Trakoun also compared the forecasts from their signal extraction model to surveys of inflation expectations and found that the most significant difference was that the model-based forecasts of PCE inflation were about half a percentage point lower than the surveys on average.

Policymakers can also look to the stock market for information about inflation expectations. One market-based measure is the breakeven rate between regular Treasury Securities and Treasury Inflation-Protected Securities (TIPS). Created in 1997, TIPS offer investors protection against inflation and deflation by adjusting their interest payments and principal based on changes in the CPI. The TIPS breakeven rate is the difference between nominal Treasuries and TIPS of the same maturity, providing a real-time measure of the market's inflation expectations. Another source of the market's inflation expectations can be found by looking at inflation swap contracts, which allow one party to transfer inflation risk to another for a fee.

In theory, one might expect market participants to pay closer attention to inflation dynamics since they are putting their money at stake. But a 2015 study by Michael Bauer of the University of Hamburg and Erin McCarthy, formerly of the San Francisco Fed, suggests that such market-based indicators of future inflation may not be any more accurate than surveys or simple forecasting rules. They found that market measures largely reflected current and past inflation movements and did not provide a lot of useful information about future inflation.

WATCHING THE ANCHOR

Although surveys and market measures of expectations may not be reliable for forecasting future inflation, they still provide a useful signal of where the

public expects inflation to head.

Under its new monetary policy framework, the Fed has made it clear that it is less concerned about inflation fluctuating in the short run as long as it averages 2 percent in the long run. Another way of putting that is that the Fed wants long-run inflation anchored at 2 percent. Throughout the year, Chair Powell and other Fed officials have indicated that if long-run inflation expectations were to drift from that 2 percent anchor, the Fed would intervene.

“We are committed to our longer-run goal of 2 percent inflation and to having longer-term inflation expectations well-anchored at this goal,” Powell said at a press conference following the FOMC’s November policy meeting. “If we were to see signs that the path of inflation, or longer-term inflation expectations, was moving materially and persistently beyond levels consistent with our goal, we would use our tools to preserve price stability.”

This commitment stems in large part from the lessons the Fed learned during the Great Inflation of the 1970s. In that decade, inflation expectations became unmoored, drifting higher and fluctuating wildly with changes in the market. To reestablish the anchor, the Fed needed to convince the public that it would do whatever it took to stabilize long-run inflation. That meant allowing the federal funds rate, the Fed’s key policy interest rate, to rise above 20 percent in the early 1980s until long-run inflation expectations fell, prompting a long and severe economic recession.

Could Fed officials in the 1960s and 1970s have detected that inflation expectations were drifting earlier — and responded sooner? Reis of the London School of Economics and Political

Science thinks so. Although many of the various surveys of inflation expectations available today did not exist at the time, Reis collected data from market prices, professional surveys, and household surveys. In his paper discussed at the *Brookings Papers on Economic Activity* conference in September, he found that while no individual data series contained a perfect forecast of inflation, the disagreement between these series did provide a signal about how well-anchored inflation expectations were.

“When you just look at the average expectation of inflation from surveys, it tends to move super sluggishly,” says Reis. “Once you combine sluggish movement with a lot of noise, it becomes very hard to see much. But when you measure the standard deviation and skewness across surveys, which I call disagreement, you get a much better idea of where expectations are heading.”

Since individual survey respondents differ in how closely they pay attention to inflation and how quickly they adjust to new information about price changes, looking at the average of several different surveys provides a muddled picture. But tracking how expectations differ across surveys can provide a clearer picture of where the inflation anchor is headed. Applying this approach to the data, Reis found that the inflation anchor began to drift as early as 1967.

What about the anchor today? Applying the same approach to current expectations data, Reis found that the anchor has drifted, but it was still early in that process. Several other recent papers have looked at this question as well. In a May National Bureau of Economic Research working paper, Bernardo Candia and Yuriy Gorodnichenko of the University

of California, Berkeley, and Olivier Coibion of the University of Texas at Austin examined a survey of U.S. firms’ inflation expectations. They found evidence that the expectations of business managers appeared “far from anchored.” Similarly, a July article by Chicago Fed researchers Gadi Barlevy, Jonas Fisher, and May Tysinger measured how well-anchored long-term expectations were by looking at how sensitive short-term expectations were to news about inflation. If long-run expectations are well-anchored, they should not respond to news that affects short-run inflation. But they found that the sensitivity of long-run expectations to news about short-term inflation changes has increased, particularly in recent months.

Economic theory and history suggest that fiscal and monetary policy play an important role in ensuring that inflation expectations remain anchored. Atlanta Fed economist Federico Mandelman has examined inflation in the aftermath of World War II. After the war, pent-up demand from years of rationing was released, and inflation shot up from 2 percent to 20 percent from 1946 to 1947. But that spike was short-lived — by 1949, inflation had fallen back to 2 percent. Mandelman credited well-anchored inflation expectations inherited from the Great Depression as well as contractionary fiscal and monetary policy for quickly returning inflation to normal levels.

“In the end, it is policy that pins down inflation, not expectations,” says Reis. “A credible central bank uses monetary policy to make expectations that differ from its target unsustainable, ensuring that expectations and actual inflation are ultimately the same.” **EF**

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BY ROSEMARY COSKREY

Paycheck Protection and the Pandemic

In March 2020, as COVID-19 rippled across the globe, small-business owners found the U.S. economy pivoting from a boom to a crisis. Aware of the mounting challenges these businesses faced, Congress quickly passed legislation that allocated \$350 billion to an initiative called the Paycheck Protection Program, or PPP. In late April, Congress passed an additional \$320 billion in funding after the initial amount was exhausted. The PPP was intended to help business owners sustain their employees' wages during the pandemic. Set up as a guaranteed loan program, it allowed eligible firms to apply for support through banks while the U.S. Small Business Administration (SBA) approved loans and forgiveness. Loans could be forgiven if no more than 25 percent of the loan amount went toward nonpayroll costs and if the firm did not cut pay or employment counts.

The PPP was an exceptionally large-scale fiscal intervention, and economists are eager to understand its efficacy. Several teams of economists have conducted research on its effects using different types of analyses.

A paper by David Autor of the Massachusetts Institute of Technology and others, released in July 2020, examined the PPP's efficacy in maintaining employment at small firms. They used administrative data from ADP, a provider of payroll services, to measure and contrast weekly employment changes of firms above and below the PPP eligibility threshold within narrow industry and state groups. The program's eligibility threshold was determined by firm size — in most industries, firms with more than 500 employees were ineligible for the program. According to their estimates, the level of employment at PPP-eligible firms

was 2 percent to 4.5 percent higher than at noneligible firms. Aggregating these results across all eligible firms, the PPP would have helped maintain U.S. payroll employment for about 2.3 million workers through the first week of June 2020. Although this work was preliminary, and the authors intend to refine their analysis and interpretation once better data become available, these initial results suggest the PPP was moderately effective in preserving small-business employment.

Research by Alexander Bartik of the University of Illinois Urbana-Champaign and others, also released in July 2020, found similar evidence of the beneficial effects of the PPP, but they approached the issue from a different perspective and used different data. Trying to understand the effectiveness of a program where private actors distribute public resources, they compared firms that received loans in the first wave (before April 16) of the PPP to firms that received loans in the second wave (after April 24). Their work relied on survey data from small-business network Alignable, which contained information on the business owners' PPP application status, employment and payroll characteristics, and operational expectations. Results of their analysis indicated that providing firms loans promptly made a big difference in program efficacy; firms receiving a PPP loan in the first round self-reported an increase in survival probabilities ranging from 9 percentage points to 23 percentage points, resulting in fewer small-business closures. In addition, they showed that PPP approval appeared to increase employment and that banks effectively allocated funds but were somewhat biased toward better-connected firms.

Finally, work released by João

Granja of the University of Chicago Booth School of Business and others in May 2020 found small effects from the PPP on local economic outcomes and business shutdowns following the pandemic, and only modest positive effects on employment outcomes. They used the SBA's loan-level microdata for all PPP loans approved under the program and combined this data with Call Reports from all active commercial banks, Homebase software data on employment indicators, Opportunity Insights data on county-level employment, and Womply data on small-business revenues. Examining the flow of PPP funds across the country, they contrasted changes in local employment and economic outcomes in regions with high versus low PPP exposure. They also examined the role that banks played in distributing loans but reached a different conclusion from the Bartik group, finding that funds were not well-targeted to areas most adversely affected by the pandemic. In general, their results indicated that the program's short- and medium-term effects on employment were small relative to the program's size, but that funding did contribute to firms' financial stability. In the future, they argued, the PPP's effectiveness in preventing permanent business closures may result in more pronounced positive employment effects.

Overall, the studies indicate that the PPP helped prevent small-business shutdowns and, to a lower degree, helped sustain employment. But evidence suggests that PPP funds were not consistently distributed to the highest-need firms. As more data emerge, economists will continue to explore the effectiveness of the PPP and its implications for future fiscal interventions. **EF**



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BY RAYMOND OWENS AND SANTIAGO PINTO

Trends in Criminal Activity, Crime Reporting, and Public Perceptions

In the United States, crime rates have been falling sharply since their peak in the 1990s. Researchers have put forward a wide range of explanations to explain this shift. Despite the overall long-term declining trend, people's perceptions of crime have been shifting, according to various polls, in the opposite direction.

Crime is a complex, multidimensional problem. Different factors explain the large observed variability in crime rates across geographic areas and demographic groups. Ultimately, the immediate consequences of crime are highly localized, affecting the overall well-being of communities. Recent highly publicized events involving police violence have heightened concerns about crime and the criminal justice system.

To assess existing law enforcement and crime preventive policies, it is important to first understand what kind of data are available to track crime, how the data are collected, what the data's limitations are, and what the data say.

SOURCES OF CRIME DATA

The two primary sources of crime data in the United States are the Uniform Crime Reporting (UCR) program, administered by the FBI, and the National Crime Victimization Survey (NCVS), conducted by the U.S. Census Bureau for the Bureau of Justice Statistics.

The UCR program compiles crime data from local law enforcement agencies. Even though participation in this program is voluntary, about 18,000 law enforcement agencies, representing 95 percent of U.S. population, are involved in it. Because local law enforcement agencies across the country do not generally follow uniform practices when classifying and

recording different types of crimes, the UCR program standardizes the data collected from the agencies. The program then converts the data into crime indices.

Index crimes — that is, crimes included in the indices — are classified into two broad categories: violent crime and property crime. The former includes murder and nonnegligent manslaughter, forcible rape, robbery, and aggravated assault; the latter includes burglary, larceny-theft, motor vehicle theft, and arson.

The UCR data are widely used by the media, policymakers, and researchers to track crime behavior. The quality of the data has been improving over time; however, the program still has a number of well-known limitations. First, it includes only crimes that are officially reported. In other words, it tracks only crimes that are known to law enforcement officials. Second, it includes only crimes known by state and local law enforcement authorities; it does not consider federal crimes or crimes at certain institutions such as jails or prisons. Third, since participation is voluntary, local agencies may not consistently submit data to the program. The FBI relies on certain processes to impute missing or unreliable data, which may vary across years. The UCR warns users that the data cannot be used to make reliable comparisons across law enforcement agencies.

The NCVS is a nationally representative survey of households conducted annually throughout the year, which asks participants about themselves and whether they were victims of a crime. The survey started in the early 1970s and currently conducts about 240,000 interviews annually. The survey reports information on nonfatal

personal crimes (rape or sexual assault, robbery, aggravated and simple assault, and personal larceny) and household property crimes (burglary/trespassing, motor vehicle theft, and other theft). It also includes information about certain household characteristics, such as household income and size and the race of the head of household. A key feature of this survey is that it also provides information about the number of both reported and unreported crimes. One disadvantage of the survey is that since it is designed to calculate victimization rates at the national level, it does not offer information about victimization rates at lower geographical levels.

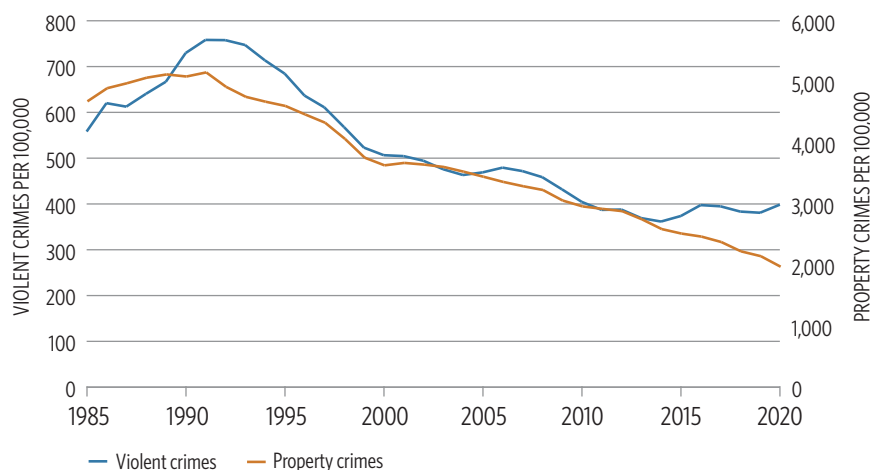
More recently, some local governments and law enforcement agencies have started to release crime data directly to the public. The Police Data Initiative is an example of this effort. At the moment, approximately 130 local enforcement agencies publicly share data as part of this initiative. As with the UCR, caution is needed when comparing information across agencies since local law enforcement agencies may follow different practices in recording and classifying crimes.

DEVELOPMENTS IN CRIME TRENDS

In general, crime data show a relatively sharp decline from 1990 through roughly 1999 in both violent crime and property crime, followed by a more gradual decline over the next two decades. (See chart.)

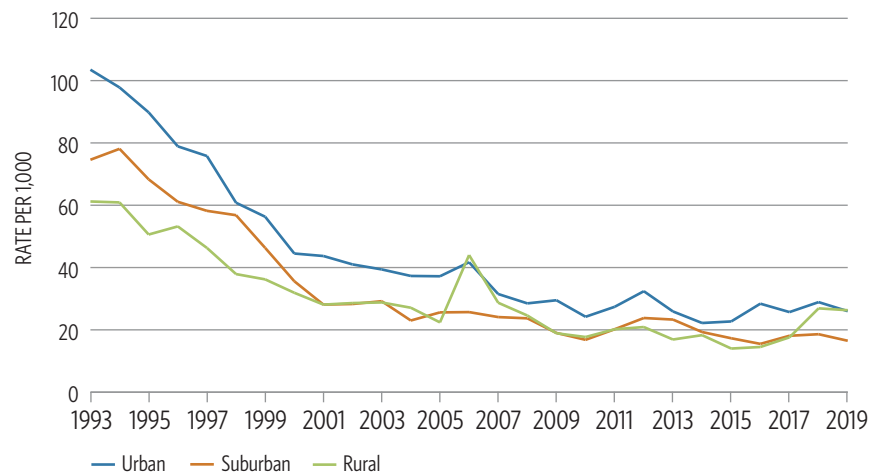
Most recently, the UCR data show that the property crime rate declined from 2,131 per 100,000 people in 2019 to 1,958 in 2020. The violent crime rate, however, increased from 381 to 399 per 100,000 people. The most

U.S. Violent Crime Rate and Property Crime Rate



NOTE: Rates are per 100,000 people. Scale for violent crime rate is on left axis; scale for property crime rate is on right axis.
SOURCE: Federal Bureau of Investigation Uniform Crime Reporting Program

Violent Victimization Rate by Location of Residence



NOTE: Rate is per 1,000 persons aged 12 or over.
SOURCE: Bureau of Justice Statistics National Crime Victimization Survey

common form of property crime was larceny-theft, followed by burglary and motor vehicle theft. Among violent crimes, aggravated assault was the most common offense, followed by robbery, rape, and murder/nonnegligent manslaughter.

It is not uncommon for the data to show unexpected year-to-year fluctuations, especially as more specific categories of crime are examined. Even after considering these types of changes, one category of violent

crime that has experienced an unusual increase from 2019 to 2020 is the murder rate. The FBI reports that the murder rate rose about 30 percent during this period, the largest annual increase on record since the 1960s, when the agency started recording this kind of crime data.

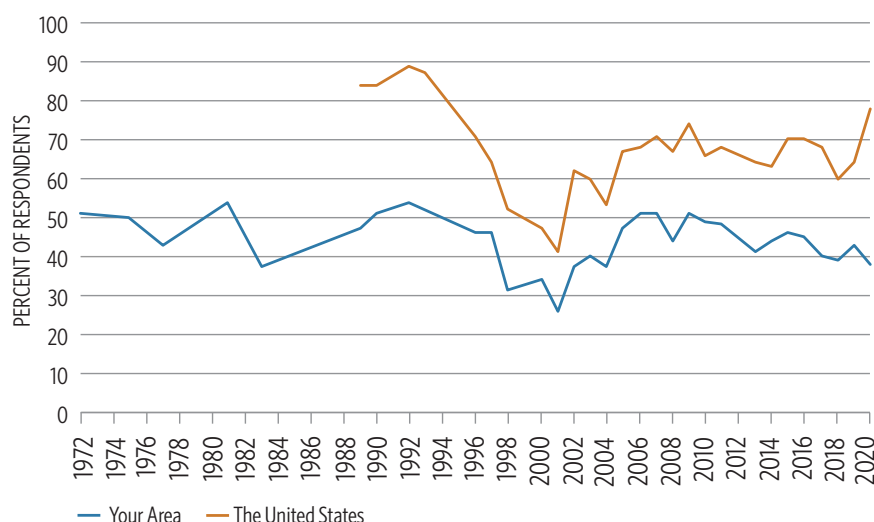
The data indicate that property crimes occur about five times more frequently than violent crimes. But the frequency with which crimes occur doesn't tell the whole story.

Even though property crimes are more frequent, violent crimes have a larger impact on society and are more costly. In a 2009 article in the *Journal of Quantitative Criminology*, Mark Cohen of Vanderbilt University and Alex Piquero of the University of Texas at Dallas performed a careful and comprehensive estimation of the costs associated with different types of crimes. These estimates include the present value of the victim's costs, costs associated with the functioning of the criminal justice system (police, courts, prisons), and the offender's productivity loss due to incarceration or other form of incapacitation. Based on their calculations, a 2017 National Bureau of Economic Research working paper by David Autor, Christopher Palmer, and Parag Pathak of the Massachusetts Institute of Technology concluded that the (weighted) average direct cost per violent crime is about \$68,000, compared to \$4,000 per property crime — or, equivalently, violent crimes are on average 17 times more costly than property crimes.

The NCVS corroborates that victimization rates (both violent and property) have sharply declined since the beginning of the 1990s, in line with the UCR data. But victimization rates differ among demographics and geographic areas. In general, violent and property victimization rates are higher for Blacks compared to Whites and other races (which includes Asians, Native Hawaiians, other Pacific Islanders, American Indians, Alaska Natives, and persons of two or more races). Also, they are higher in urban areas compared to suburban and rural areas. (See chart.)

Perceptions of national crime reflected in opinion surveys, however, do not closely align with the FBI data. The latest annual crime survey, conducted by Gallup during the period Sept. 30 to Oct. 15, 2020, shows that an increasing number of people perceive that crime has increased in the United States since the beginning of the 2000s. One interesting observation is that

Gallup: "Is there more crime in _____ than there was a year ago?"



NOTE: Values are percent of respondents answering "more."
SOURCE: Gallup

while respondents are more likely to perceive that crime has increased at the national level, they are also less likely to perceive an increase in crime in their local areas. (See chart.)

Within the Fifth District, the UCR data show that crime rates have followed the general declining trend. But there are wide discrepancies across states within the district. (See charts on next page.) Property and violent crime rates in the District of Columbia are the highest not only within the Fifth District, but also nationwide. Crime rates in South Carolina are generally above the national average. The violent crime rate in Maryland is about the same as the one observed in South Carolina, and the property crime rate has been following the national trend closely since 2005. In Virginia and West Virginia, the crime rates are lower than the national average. Violent crime rates in North Carolina track the national trend almost perfectly.

But state averages often obscure crime in specific areas within the state, especially within cities. Data for the city of Baltimore, for example, obtained from the Open Baltimore initiative, show that while the property crime rate has declined since 2011 (from 48.6

per 1,000 residents to 29.3), the violent crime rate has actually increased (from 15.1 per 1,000 residents to 24.8).

GEOGRAPHIC CONCENTRATION OF CRIME

Index crimes are not concentrated in any particular state or city. This is consistent with theory. As stated by Brendan O'Flaherty and Rajiv Sethi of Columbia University in a 2015 article in the *Handbook of Regional and Urban Economics*, crime is a nontradable activity, so, in principle, it is not expected to be concentrated in a specific geographic area. The idea is that more tradable activities tend to cluster spatially because they benefit from agglomeration economies; by locating near other firms in cities or industrial clusters, participants can share knowledge and have access to a larger pool of inputs. Nontradable activities, on the other hand, can only be performed locally, so they are generally more uniformly distributed across locations.

O'Flaherty and Sethi calculated indexes of crime concentration, and the indexes show that intrametro-politan concentration of crime tends to be larger than intermetropolitan concentration. In other words, the

concentration of crime is relatively high within cities, but crime is not concentrated in any specific city.

The concentration of crime at certain sites in a city, typically known as "hot spots," is markedly high for crimes such as robbery and motor vehicle theft. These locations tend to be specific places such as intersections, street sections, or addresses, rather than whole neighborhoods.

In an article in *Criminology* in 2015, David Weisburd of George Mason University coined the term "law of crime concentration" to refer to the importance of this phenomenon in explaining the spatial patterns of criminal activities. This type of crime behavior is also relevant when designing law enforcement policies, since targeting police resources to these areas would likely have a large impact on crime reduction.

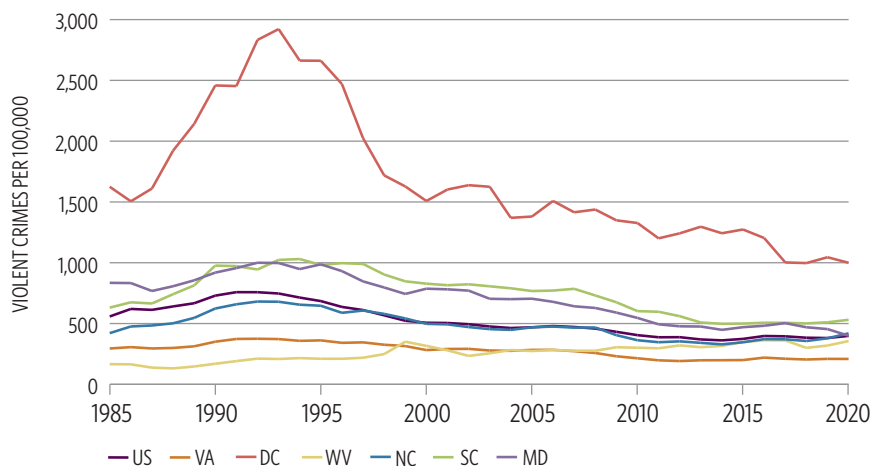
CRIME REPORTING IN 2020

NCVS data indicate that most crimes are not reported to the police. (See chart on p. 34.) In 2019, for example, only 40.9 percent of violent crimes and 32.5 percent of household property crimes were reported to authorities. Motor vehicle theft is the crime most frequently reported (an estimated 80 percent of these crimes are reported) and theft/larceny is the least (about 27 percent), both property crimes. For violent crimes, the lowest reporting percentage is for rapes/sexual assault (34 percent) and the highest is for robbery (47 percent). (Homicide generally has a high reporting rate, but it isn't one of the crimes included in the NCVS.)

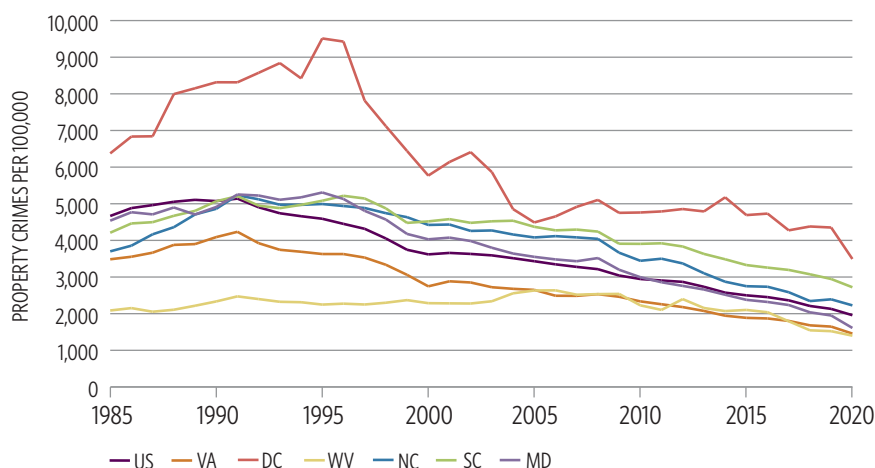
Among the main reasons why a crime was not reported, according to respondents, were fear of reprisal or "getting the offender in trouble," a feeling that police "would not or could not do anything to help," or a belief that the crime is "a personal issue or too trivial to report."

Most of the reported crimes are not solved. According to UCR data for 2019, about 45 percent of officially

Fifth District Violent Crime Rates



Fifth District Property Crime Rates



NOTE: Rates are per 100,000 people.

SOURCE: Federal Bureau of Investigation Uniform Crime Reporting Program

reported violent crimes are cleared by arrest (or by exceptional means, which include the death of the offender and other exceptional circumstances that prevented the prosecution of the offender). For property crimes, 17 percent of the offenses are cleared.

The year 2020 was atypical in many ways. COVID-19 and several high-profile events involving police violence, such as the murder of George Floyd in Minneapolis, had an effect on how people interacted. These events also affected the overall level of crime, the types of crimes, and the incentives to report crime. While the property crime

rate declined from 2019, the violent crime rate actually went up. But these statistics leave open the possibility that some people may have decided in 2020 not to engage with police by reporting a crime or to report certain types of crimes and not others.

Using publicly available data for the city of Baltimore, we examined the extent to which residents changed their reporting behavior in 2020 compared to 2019. Changes in reporting are captured by the difference in the number of 911 calls between the two years. The results show that from March to August, the number of 911

calls was lower in 2020 compared to 2019, suggesting that a large number of incidents were not reported in 2020.

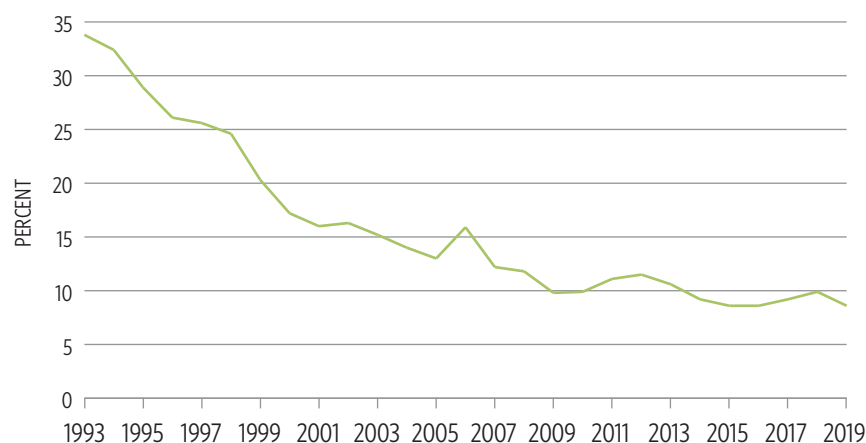
This change in behavior observed throughout 2020 can be attributed to a variety of reasons. Taking a closer look at the city of Baltimore, it appears that the decline in 911 calls that started at the end of March coincides with the implementation of the stay-at-home orders in Maryland. These orders stayed in place from March 30 until May 15. During this period, the number of 911 calls in 2020 was far less than in the same periods in 2019 or 2021: 7,571 fewer 911 calls were made in 2020 relative to the same period in 2019; 5,249 fewer calls were made in 2020 relative to the same period in 2021.

This pattern was observed in other cities as well. Lockdown policies implemented by states and local governments during 2020 were intended to lower the spread of COVID-19. They decreased the overall level of mobility and, as a result, the intensity of economic and social interactions taking place across communities. All this had an effect not only on the number of criminal activities, but also on the types and targets of crimes and the likelihood of reporting certain crimes.

ENGAGEMENT WITH POLICE IN 2020

A recent article in the *American Journal of Health Economics* by Lindsey Bullinger, Jillian Carr, and Analisa Packham focused precisely on this issue. The authors examined cell phone block-level activity data, 911 calls, and crime data for Chicago during the pandemic. They found that even though the announcement of the stay-at-home orders led to a decrease in total calls for police service, the share of domestic violence-related calls increased. The article also showed that domestic-related crimes officially reported to the police and arrests actually declined. Specifically, reports fell by 6.8 percent and arrests for domestic violence crimes fell by 26.4 percent relative to 2019. The authors concluded

Rates of Violent Victimization Reported to Police



SOURCE: Bureau of Justice Statistics National Crime Victimization Survey

that during March and April 2020, about 1,000 cases of domestic violence crimes in Chicago were not reported to the police.

In many locations, 911 calls in 2020 remained low even after the expiration of the stay-at-home orders. Specifically, in the city of Baltimore, from May 25 to July 27, some 54,821 fewer 911 calls were made in 2020 compared to the same period in 2019 (45,750 fewer calls in 2020 relative to 2021). The drop in requests for a police response has been attributed to a change in citizens' reporting behavior after the high-profile murder of George Floyd on May 25, 2020. In the city of Baltimore, for example, public demonstrations over the death of George Floyd were particularly visible during this period. Such incidents may have affected the desire of citizens to cooperate and engage with the police.

Recent work by Desmond Ang of the Harvard Kennedy School, Panka Bencsik of the University of Chicago, Jesse Bruhn of Brown University, and Ellora Derenoncourt of Princeton University carefully examined changes in the ratio of police-related 911 calls to the number of gunshots (detected through a technology known as ShotSpotter that uses microphones scattered around different geographic areas) in eight cities: Baltimore, Cincinnati, the District of Columbia, Milwaukee,

Minneapolis, New York City, Richmond (California), and San Diego. They found that this ratio declined immediately after Floyd's murder. They also found that this change in behavior is observed in both predominantly non-White and predominantly White neighborhoods nationwide. They argued that this provides evidence of a causal effect of police violence on the incentives of citizens to engage and cooperate with the police.

STATE AND LOCAL SPENDING ON PREVENTION

The direct involvement of state and local governments in crime preventive activities is reflected in the amount of resources they devote to police protection and corrections. In 2018, state and local governments spent \$121 billion on police protection, roughly 3.7 percent of direct general expenditures, or \$369 per capita, and \$82 billion on corrections, 2.6 percent of expenditures, or \$255 per capita. Compared to other spending categories, the share spent by state and local governments on police and corrections is a little bit higher than the share devoted to highways.

During the period 1977-2018, real spending on police protection per capita increased on average by 1.5 percent annually, about the same rate as the increase in state and local direct

general expenditures, and annual per capita spending on corrections increased by about 2.7 percent. As a result, police spending as a share of total spending remained fairly constant during the period, at about 3.7 percent of direct general expenditures; spending on corrections increased from 1.6 percent in 1977 to 2.6 percent in 2018 (it reached a peak of 3.3 percent in 1999 and 2000).

Most spending on police is done by local governments (about 86 percent). While state expenditures on police are mostly targeted to highway patrols, local government spending supports sheriffs' offices and police departments.

In the Fifth District, the District of Columbia spent \$908 on police protection per capita and \$366 on corrections per capita in 2018, leading all the other jurisdictions in both categories. South Carolina spent the least per capita in both categories. The amount spent on police protection as a percentage of direct general expenditures in Maryland, the District of Columbia, and North Carolina exceeds the U.S. average, and the share spent on corrections is higher than the U.S. average in Virginia and Maryland. More research is needed, however, in order to determine the effectiveness of spending on crime.

CONCLUSION

A regular review and assessment of existing law enforcement practices is critical to ensure their continued effectiveness. The commitment to engage in such a process would also contribute to establishing a stronger connection between citizens and law enforcement. Such evaluation requires a careful examination of the data. It is important not only to understand what the data say, but also to be aware of their limitations. Any effort by local agencies and policymakers to improve the quality of the data and also make it broadly available to the public would enhance transparency and heighten confidence in the law enforcement institutions. **EF**

BY JOHN MULLIN

An Economist's Green New Deal

Yale University's William Nordhaus won the Nobel Prize in economics in 2018 for his work on the interplay between economics and the environment. One of his main contributions was the development of the Dynamic Integrated model of Climate and the Economy (DICE). The model has become an important tool for analyzing the costs and benefits associated with climate policies, including the proposal favored by Nordhaus and many of his fellow economists: the establishment of a global tax on carbon emissions.

The Spirit of Green presents Nordhaus' case for a global carbon tax using language that is likely to be accessible to a general audience. He argues for a point of view that he calls "the Spirit of Green," which he differentiates from alternative viewpoints on the political left and right. On the left side of the spectrum stands "deep green," which includes those environmentalists and scientists who, in his view, place an inordinate value on the preservation of nature at the expense of human welfare. At the far right of the spectrum stands "muck brown," which consists of "incentivized skeptics" who have economic or political motives to oppose green policies. And on the moderate right stands "free market," a viewpoint that is sometimes too narrow, from Nordhaus's perspective, to properly account for the spillover effects — known as externalities — that private activity can have on the public.

For Nordhaus, private markets are key to the efficient provision of private goods, but government intervention is needed to correct for externalities. This means that society needs robust markets for private goods, supported by laws to enforce and protect

property rights and contracts — but it also means that efficient environmental regulation requires imposing taxes to raise the private cost of activities that have negative spillover effects on the environment. Efficient management also requires public support for investments in research and development, green and otherwise, that create positive spillover effects for society.

While Nordhaus agrees in principle that there are many possible mechanisms for dealing with environmental externalities, he is skeptical about the efficacy of many of them. He recognizes that liability laws can discourage pollution in some cases but argues that these laws have serious limitations when property rights are not well defined, such as with air pollution. "Command and control" measures, such as auto emissions standards, may have played a positive role in the past, but they are rather crude tools that generally do not accurately reflect the costs and benefits of pollution abatement. He argues that cap and trade policies have had problems in practice, pointing to the case of sulfur dioxide, where U.S. emissions caps were set so high that the market price of emissions permits eventually declined to the point where "emissions were essentially free."

Nordhaus is highly critical of the Green New Deal resolution proposed by Rep. Alexandria Ocasio-Cortez (D.-N.Y.) and Sen Edward Markey (D.-Mass.) in February 2019, largely due to its lack of grounding in cost-benefit analysis and its absence of market-based approaches. He regards its goals as arbitrary and unrealistic — particularly the proposal to attain zero net global greenhouse gas emissions by 2050.



THE SPIRIT OF GREEN: THE ECONOMICS OF COLLISIONS AND CONTAGIONS IN A CROWDED WORLD

By William D. Nordhaus, Princeton, N.J.:
Princeton University Press, 2021, 355 pages

According to Nordhaus, the Green New Deal "avoided the inconvenient truth that climate-change policies... would require aggressive price-raising measures, probably through carbon taxes." Moreover, he criticizes the Green New Deal for making no mention of international coordination. According to Nordhaus, a global climate compact is needed — with penalties for nonparticipants — to overcome the "free rider" problems associated with carbon abatement.

The Spirit of Green covers a great breadth of additional topics, including green national accounting and the ethical responsibilities of individuals and corporations. Yet Nordhaus' exposition may have benefited from more elaboration in one specific area: the methodology used by economists to estimate the marginal external cost of carbon emissions — and hence the appropriate rate for a global carbon tax. This is a crucial estimate for policy purposes, and Nordhaus' prominent role in developing the models underlying it puts him in a great position to discuss their mechanisms. But that omission is understandable in a book aimed primarily at nonspecialists. **EF**

BY KARTIK ATHREYA

Where Did the Workers Go?

For many observers, the most exceptional aspect of the COVID-19 economic recovery has been the unprecedented number of unfilled jobs openings. The U.S. job vacancy rate reached an all-time high of 7 percent in July 2021, which amounted to over 11 million job vacancies. Since then, businesses have continued to report difficulty filling openings, particularly for low-wage positions, according to business managers responding to Richmond Fed surveys.

It is hardly unusual for the job vacancy rate to increase as the unemployment rate declines during an economic recovery. Indeed, the inverse movement of the two rates — depicted by what economists call the Beveridge curve — is a regular feature of economic expansions. But the abnormally high increase in the vacancy rate during the current recovery has raised questions, perhaps most of all about whether there is a mismatch between the skills employers seek and those possessed by unemployed workers.

Many explanations for the phenomenon have been offered. One of the most common is that expanded unemployment insurance (UI) benefits have created a major work disincentive. Recent research doesn't support this idea, however. Peter Ganong of the University of Chicago and several co-authors estimated that increasing UI benefits had only a relatively small effect on the U.S. job-finding rate. Taking a different approach, Arindrajit Dube of the University of Massachusetts Amherst compared states that cut benefits by differing amounts in mid-2020; he found that the size of benefit reductions seemed to have little effect on job gains. Lastly, a recent study by economists at the San Francisco Fed estimated that increasing UI benefits by \$600 per week had only a moderate effect on job finding.

While these results suggest only modest economy-wide effects of increased UI benefits, they do not rule out substantial effects in certain low-wage sectors, such as food service. The San Francisco Fed study calculated that while most unemployed U.S. workers would be willing to accept job offers at their previous wages, workers in the lowest-paid occupations would be roughly indifferent between accepting such a job and remaining unemployed. Indeed, in July 2021, the job vacancy and unemployment rates in the BLS's "accommodation and food services" industry — 11.3 percent and 9.2 percent, respectively — stood well above the corresponding economy-wide figures.

A few other explanations are on the table. For instance, some analysts have estimated that a surge in early

retirements has accounted for as much as half of the decline in labor force participation. Part of this may have come from pandemic-related health concerns of older workers. Also, some early retirements may have been a side effect of policies implemented by Congress and the Fed: Large fiscal transfers and accommodative monetary policy likely supported high asset prices, particularly in stocks and homes, and these financial "windfalls" may have increased the relative attractiveness of retirement for many people.

Another factor that may well be important, though research has not been able to measure it precisely, is that parents of younger children may be less willing to accept job offers because they need to take care of children who are engaged in remote schooling or homebound due to illness or health protocols. That said, one recent study found that employment declines during the crisis were only modestly greater for women with children younger than 13 than for those without children under 13 — a finding that does not seem to be consistent with the idea of homeschooling as an important driver of job vacancies.

Still another interpretation of the perceived labor shortage relates directly to the pandemic: Perhaps many jobs that involve customer service have become more stressful and dangerous without a countervailing increase in pay. If so, high job vacancies may at least partially reflect an unwillingness of employers to adapt to changed supply-demand conditions by raising wages to market clearing rates.

Whatever the explanation, there are underlying demographic factors that may cause the trend to persist. It is plausible that the United States is approaching an era of slower labor force growth due to declining birth rates, retiring baby boomers, and more severe immigration restrictions. That may sound like good news for U.S. workers, but it isn't necessarily. While most economic models do predict that wages will increase in response to a decline in the supply of labor relative to capital, it is not clear whether a decline in the *rate of growth* of the labor supply would cause such a relative supply shift. Such a decline is likely to diminish the return to capital and, with it, investment — possibly leaving wages unaffected or even depressed. The answer hinges on the economy's investment response and, ultimately, on productivity growth, for which ideas and innovation — from people — are the only source. **EF**

Perhaps many jobs that involve customer service have become more stressful and dangerous without a countervailing increase in pay.

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NEXT ISSUE

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ENTREPRENEURSHIP IN RURAL DEVELOPMENT

Can local entrepreneurship move the needle on economic growth in rural communities? There's evidence in the literature that suggests it can. The pandemic-era trend of tech workers moving away from big cities may help. On the other hand, rural entrepreneurs face headwinds in raising capital. California's Santa Clara Valley transformed in the 1960s and 1970s from agricultural country to affluent Silicon Valley — could it happen again in another rural area today?

RURAL NURSING SHORTAGE

Rural hospitals have long faced a shortage of nurses. That problem has been worsened by a nationwide surge in demand for health care workers during the COVID-19 pandemic. How can rural hospitals compete with larger urban health care centers to attract the nurses they need?

COMMUNITY REINVESTMENT ACT

Federal bank regulators are considering changes to the way they implement the Community Reinvestment Act, or CRA, which was enacted in 1977 to encourage banks to meet the credit needs of low- and moderate-income communities. Consumer advocates have called for an expansion of CRA authority to cover nonbank mortgage companies. Many bankers, on the other hand, have advocated streamlining the CRA process, which they argue is ineffective and costly.

AT THE MALL: AN ECONOMIC HISTORY

Shopping centers got their start in Baltimore in 1907 with the opening of the Roland Park Business Block, an English Tudor-style complex of six shops. Starting in the 1950s, the modern shopping mall emerged, pioneered by the prolific Vienna-born mall architect Victor Gruen. Malls became gathering places of suburban America. More recently, however, the emergence of online retail and now the pandemic have thrown their future into question.

WORKFORCE HOUSING

The affordability of rural housing often gets less attention than that of urban housing. Even though housing costs tend to be lower in rural areas than urban areas, almost half of rural low-income households in the Fifth District (those earning less than 80 percent of the area median income) spend more than 30 percent of their income on housing. What are the factors behind the availability of affordable workforce housing in rural parts of the Fifth District?



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