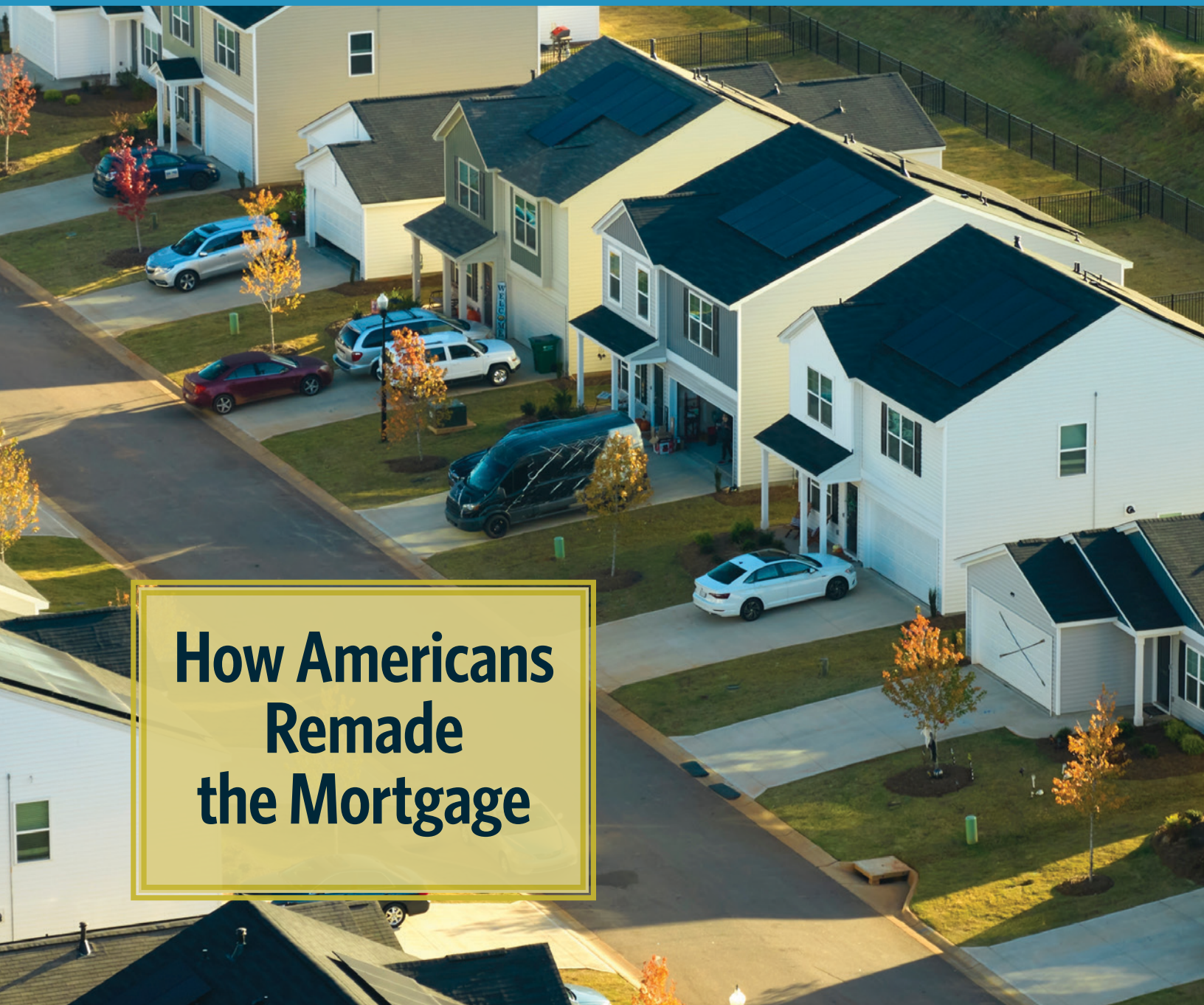


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After the Pandemic**

**Treasury Market
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**Interview with
Annamaria Lusardi**

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A Labor Drought?

Following the economic pain of the pandemic, the economy has bounced back, supported by historic levels of fiscal and monetary stimulus. Unemployment has dropped and is now basically at pre-pandemic levels. Yet labor force participation has been slow to return.

At first, that seemed to be due to sickness and quarantining, child care responsibilities, and enhanced unemployment benefits. But even once the economy and schools reopened, vaccines rolled out, benefits ceased, and wages went up, participation has remained stubbornly below pre-pandemic levels.

More recently, even as the Fed has raised the fed funds rate steeply to bring inflation under control, labor demand has continued to run ahead of supply. The result has been unprecedented labor-market tightness. Job openings have hit record highs. Businesses have struggled to hold on to or find enough workers, especially in industries with lower pay or tougher work environments. This issue has been particularly pronounced in skilled trades, like nursing or welding or truck driving. In March 2022, we reached two open jobs for every unemployed person; we are not far from that high today. Labor force participation in January stood at 62.4 percent, well short of the 63.3 percent of February 2020.

A NEW WORLD

All of this leads me to ask: Are we seeing a shift in the supply of labor?

To be sure, the labor market will continue to ebb and flow with the business cycle. Yet it's time to consider whether our economy is entering a period of — on average — unaccustomed labor scarcity.

Our economy has operated with a growing labor force for decades. We benefited from a number of trends



boosting the labor supply: the post-World War II baby boom, women more fully entering the workforce, increased educational attainment making more people ready for more jobs, better health allowing workers to work longer, and high levels of immigration. Companies could also tap into ever-growing pools of low-cost offshore labor.

Businesses adapted accordingly. They often chose to hire from outside rather than develop their own people; for example, the huge and attractive bank training programs of my era were largely eliminated in the '90s when banks realized the market had surplus bankers. Firms got more comfortable with higher-attrition staffing models, reoriented toward part-time work and outsourcing, and became more willing to do layoffs rather than commit to job security. They reduced retirement and health care benefits.

This excess-labor world kept wages and benefits, and effectively inflation, down. Labor's share of income dropped. (See "Workers' Shrinking Share of the Pie," *Econ Focus*, Second/Third Quarter 2019.) This was good for businesses and good for investors.

It was less good for the existing workforce.

Now, there have been many predictions over the last 10 years that as baby boomers aged, participation would reverse its positive trend. But in the long economic upturn before the pandemic, participation declined far less than expected. Perhaps the sheer duration of that upturn brought hesitant people on the margin back to work. Or maybe the Great Recession forced near-retirees to work longer. Or perhaps the rise of certificate programs and the gig economy better connected workers to the workforce. Regardless, the net outcome was that — despite some complaints by companies — labor was fully available. Wage growth was relatively modest.

That's certainly not the world we find ourselves in now.

It's possible that labor force participation will rebound — over time — to our pre-pandemic normal. But what if it doesn't? What if the aberration isn't today but instead the above-trend participation at the end of the last upturn? There are many reasons to think that might be the case.

The growth of the working-age population is relatively straightforward to forecast, and the outlook isn't good. Fertility rates are down, and that trend would take a generation to reverse. My generation, the baby boomers, are aging out of the workforce, and the many workers who retired during the pandemic are unlikely to come back. As of January, we were still down about 1.6 million older workers. Immigration policy also looks unlikely to materially change any time soon. As of January, we were missing over 800,000 prime-age immigrants versus our 10-year pre-pandemic trend. Offshoring has been complicated by increasing wages in developing countries and heightened awareness of the risk of being dependent on foreign labor sources.

And participation is clearly challenged too. COVID-19 had an impact, especially given the added pressure of child care and elder care. This seems most pronounced for working-class women, who may no longer be able to make the math work to stay in the labor force, and for the many recent retirees taking care of their parents, spouses, or grandkids.

So, labor supply looks like it will remain constrained for some time.

THE ECONOMY IN A SHORT-LABOR WORLD

A shortage of workers would limit our growth and pressure inflation — until businesses, nonprofits, and governments can deliver productivity enhancements, structure incentives to bring more workers into the workforce, or both.

As I travel my district, I hear about many initiatives already underway to bring people off the sidelines. I've talked to a steel company that invested in full-time recruiters and to a tool distributor that started its own soft-skills training program. I've talked to a poultry processor that has widened the profile of whom they are open to hiring — dropping drug tests and background checks. Employers are reconsidering working conditions, revising schedules, and redesigning jobs to better match worker preferences. Remote work is a visible example of this. They are investing in partnerships with community colleges to better attract and develop skilled tradespeople. Particularly intriguing have been initiatives to provide child care or housing support for employees, taking a more active role in tackling barriers to work. I'm reminded of what happened the last time labor was this short — in the early '50s. Employers in company towns attracted workers by

investing in the broader environment, including housing and amenities.

But not all responses will be good for workers. I talked to a fast-food brand that described how automation and robotics could reduce store staffing by half. Employers who pay more will demand higher productivity or raise prices, thereby lessening demand and eventually jobs. You are seeing lower service standards already, such as hotels cutting back on housekeeping or restaurants taking orders via QR code. Offshoring could increase, focused on markets with fewer geopolitical pressures. All of these are particularly threatening to the last people into the workforce who might find entry is more of a mountain to climb with entry-level jobs increasingly scarce.

Governments and nonprofits will want to think through how they can promote more labor supply as well. Constrained longer-term economic growth isn't good for our tax base, our competitiveness, or, in the longer run, our workers. They should be exploring policies that work the supply side by encouraging workforce participation and preparation.

Canada's prime-age women's participation grew over five points in the 20 years before the pandemic, while the U.S. rate dropped nearly a full point. Research from the San Francisco Fed points to parental leave policies in the two countries as a key differentiator. The same research highlights flexible work arrangements as a driver of increased women's participation in other industrialized countries. And the two countries tax second earners much differently as well.

Similarly, between 2000 and 2019, the employment-to-population ratio for Japanese adults ages 60 to 64 increased 19.3 percentage points to 70.3 percent — seven in 10 Japanese

in that age bracket are working. For context, the U.S. ratio in 2019 was 56 percent. Japan (where the population is, to be fair, healthier) has pursued several policies to increase employment of older workers, including subsidies, pushback against mandatory retirement ages, and training for employers on how to make jobs friendlier for older workers.

These ideas are worth exploring in this country. Additionally, it is worth exploring increased legal immigration, bringing those with skills, work ethic, and entrepreneurship into our workforce. On participation, there could be significant leverage in further investment in education, job training, and drug rehabilitation, as well as in reimagining the child and elder care industries and in exploring benefit and tax policy changes that could bring about further workforce participation.

To sum it up, COVID-19 has caused businesses, governments, and — yes — even economists to reassess their assumptions about the labor market. Increasingly, I fear we are moving to an environment where, over the medium term, labor is considerably scarcer than we are used to. That situation can be managed, as other countries have proven, but it will require innovations by companies and by our public institutions.



Tom Barkin
President and Chief Executive Officer

A longer version of this essay was delivered as an address to the Virginia Economic Summit and Forum on International Trade on Dec. 2, 2022.

BY KATRINA MULLEN

New from the Richmond Fed's Regional Matters blog

Joseph Mengedoth. "Fifth District Businesses Weigh in on Hiring and Wages."

In November, the Richmond Fed's monthly survey of business conditions included its annual questions on participants' expectations for hiring and wage increases in the coming year. Similar to pre-COVID-19 expectations, 37 percent of firms anticipated employment increases in the next 12 months. Among the firms hiring more workers, the top reasons were expected sales growth and overworked staff. Some 75 percent of firms indicated they had raised wages, offered signing bonuses, or raised total compensation for new hires.

Laura Dawson Ullrich and Sierra Latham. "Hispanic Postsecondary Enrollment Increases Throughout the Fifth District."

In the last decade, colleges and universities have become more diverse. The greatest shift has been in Hispanic enrollment: Between 2010 and 2020, Hispanic students as a share of total enrollment in the United States grew from 13.5 percent to 20.3 percent. The same trend has generally occurred in the Fifth District. Hispanic enrollment more than doubled in the District of Columbia and the Carolinas. (An exception is West Virginia, where postsecondary enrollment declined among Hispanic young adults ages 18-24.) In order to recruit and retain Hispanic students, several colleges, universities, and nonprofits in the Fifth District have been trying new approaches. The Hispanic College Institute at Virginia Tech pairs current college students with prospective high school students for a four-day residential program, while LatinxED in rural North Carolina prepares students and their families with yearlong college readiness and support.

Hailey Phelps. "How are CDFIs Managing Pandemic-Related Disruptions?"

The Fed's COVID-19 Community Impact Survey, released in November, highlighted the effects of the pandemic on low- to moderate-income communities and the organizations serving them, including community development financial institutions (CDFIs). The majority of CDFIs reported at least some pandemic-related disruptions within the communities they

serve, with small businesses experiencing the most (79 percent), followed by disruptions to household financial stability (70 percent). Moreover, CDFIs themselves also experienced disruptions, but that share decreased from 32 percent in 2021 to 17 percent in 2022. While CDFIs continued to report difficulty in recruiting staff and volunteers and meeting demand for services, they also reported that disruptions are easing, and they expect to meet more of their demand this year.



R. Andrew Bauer and Adam Scavette. "The Rural Reach of ARPA's Development Grants in the Fifth District."

Since the American Rescue Plan Act (ARPA) was enacted in March 2021, Fifth District communities have been awarded more than 100 projects totaling \$440 million. The majority of the funding in the district — provided by the U.S. Economic Development Administration — has gone toward two of the six ARPA programs: Build Back Better Regional Challenge and Economic Adjustment Assistance. The largest Build Back Better recipient in the district was the Appalachian Climate Technology Now Coalition in West Virginia, a coalition of cities, economic revitalization organizations, academia, and private firms, which received nearly \$63 million for projects ranging from a building revitalization to a sustainability initiative. While most projects in the district were in urban areas, the dollars invested per capita were higher in rural areas.

Sierra Latham. "Recent Trends in Fifth District Housing Market Indicators."

From housing inventory to months' supply of housing, market indicators can highlight trends in the housing market. In the Fifth District, both housing inventory and months' supply have been rising in all states, indicating that the tight housing markets are starting to loosen. (See "The Housing Market and the Pandemic," *Econ Focus*, Fourth Quarter 2020.) More recently, too, sales prices in the district have started to drop below list prices. Yet even with more housing inventory and moderating price growth, many Americans cannot afford to purchase a home. Nationally, the decline in housing affordability began in early 2021 with increased sales prices and continued in spring 2022 when interest rates increased. **EF**

The COVID-19 pandemic dramatically reduced transit ridership across the country. Operators across the Fifth District are still figuring out how to adapt.



Public Transit Rides Out the Pandemic Storm

The opening months of the COVID-19 pandemic saw an immediate and unprecedented abandonment of public transit. Over the prior two decades, transit systems delivered an average of 838 million trips a month, according to data collected by the U.S. Department of Transportation. Even the 9/11 terrorist attacks resulted in only a small and short-lived disruption to transit ridership. But in the first two months of the pandemic, ridership fell by 83 percent. Some transit systems saw even sharper drops: For instance, average weekday ridership on Washington, D.C.'s Metro rail system fell from nearly 640,000 in February 2020 to just 36,000 in April 2020 — a 94 percent loss.

This collapse was driven by widespread lockdown orders and businesses shifting work from offices to homes, drastically reducing the number of commuters using public transit. There were also concerns that transit vehicles could be a vector for the spread of the virus. In an April 2020 NBER working paper, Jeffrey Harris of the Massachusetts Institute of Technology found that New York City's subway system was a "major disseminator" of the coronavirus during the initial outbreak of the disease.

Moreover, many transit systems entered the pandemic in already-wounded condition. A 2022 report from the Federal Transit Administration-sponsored Transit Cooperative Research Program found that ridership declined by about 15 percent nationwide between 2012 and 2018. The report attributed this decline primarily to changes in household incomes and rates of car ownership, rising fares, falling gas prices making driving cheaper, and the introduction of ride-hailing services like Uber and Lyft.

With the arrival of vaccines and treatments for COVID-19, most restrictions on travel and in-person activities have been lifted. But while transit ridership has steadily recovered since the spring of 2020, on average it remains around 30 percent below pre-pandemic levels. Emergency federal and state assistance has helped fill some funding gaps. Through the 2020 CARES Act and Consolidated Appropriations Act and the 2021 American Rescue Plan Act, the federal government provided a total of nearly \$70 billion of support to transit agencies. But as these sources of funding expire, transit administrators must find ways to adapt to the ongoing changes triggered by the pandemic.

Policymakers have long been interested in public transit as a way to connect workers to more job opportunities as well as reduce pollution and traffic congestion. Historically, low-income households have been more reliant on transit, and this reliance is one reason the poor are more likely to live in cities. Mass transit systems tend to be located in metropolitan areas, taking advantage of greater population density to offer trips at a lower cost. While Brown University economist Matthew Turner expressed skepticism about the ability of new transit projects to single-handedly generate economic growth and new opportunities for the poor in a 2019 literature review for the Hamilton Project, he did find that transit systems play a key role in influencing where people live and work. The future of transit in a post-pandemic world is therefore of greatest importance for those individuals who have come to rely on it most.

HYBRID WORK AND THE FUTURE OF COMMUTING

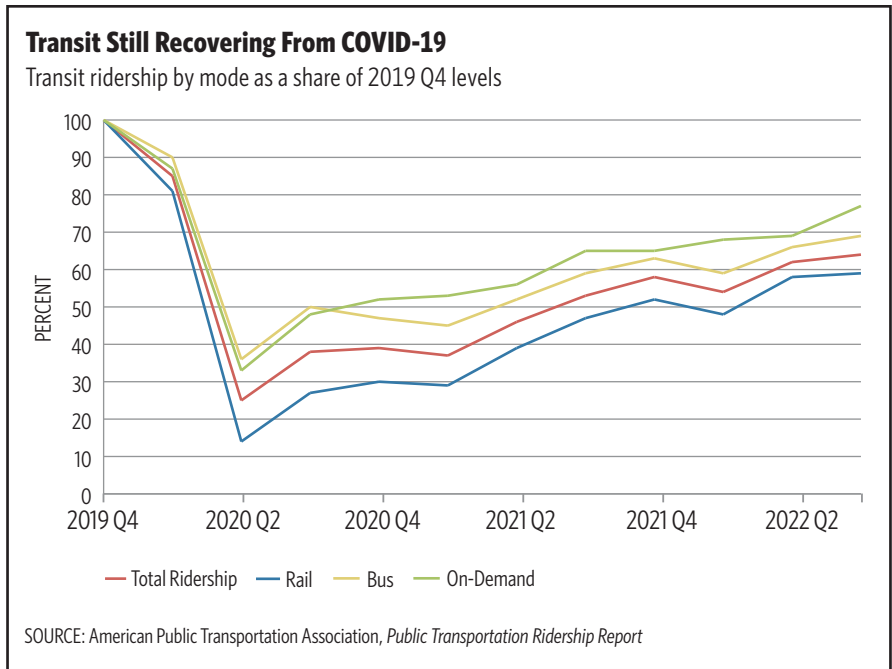
One of the biggest threats to transit ridership today is the increased prevalence of working from home. In a 2021 *Journal of Regional Science* article, Rebecca Brough of the University of California, Davis; Matthew Freedman of the University of California, Irvine; and David Phillips of the University of Notre Dame documented how the ability to work from home affected transit use in King County, Wash., during the first few months of the pandemic.

King County includes Seattle, which was the site of one of the first COVID-19-related deaths in the United States. Between February and April 2020, public transit use in King County fell by 74 percent, as Washington state issued stay-at-home orders and all nonessential in-person businesses closed. But this overall decline in ridership doesn't tell the whole story.

"In Seattle, there were white-collar workers who commuted to Amazon or Microsoft before the pandemic using the bus. Those are the sorts of places where we saw big declines in transit ridership," says Phillips. "But if you look at other neighborhoods, like the southern part of King County, which has a higher poverty rate and larger concentration of blue-collar workers, there were much smaller drops in transit ridership."

Brough, Freedman, and Phillips found that as time passed from the initial lockdown period, an increasingly important factor in explaining this difference in transit use was the ability to work from home. More-educated, higher-income individuals were more likely to be able to work remotely, reducing their need to travel, while many lower-income workers remained reliant on transit to get them to in-person jobs.

As the recovery from the pandemic continues, transit



operators have been left wondering how much teleworking will stick. Stephen Davis of the University of Chicago and Stanford University's Hoover Institution has been studying this topic along with other researchers. At the height of the pandemic, he and his co-authors estimated more than 60 percent of full paid days were being worked at home. That share has since declined, but many workers continue to work a hybrid schedule, with some days at home and some in the office.

"I think hybrid work is here to stay for many knowledge workers and many back office and administrative support staff," Davis told *Econ Focus* in a 2022 interview. Workers continue to express a strong desire to work from home and attach a high value to it, 5 percent of pay on average, Davis and his co-authors found.

The continued prevalence of hybrid schedules for some workers may partly explain the uneven recovery of transit systems across the country. Nationally, subways and commuter rail systems experienced steeper ridership losses and have been slower to recover than buses. (See chart.) This may be because rail transit is more likely to be used by white-collar knowledge workers.

The Washington, D.C.-area transit system offers a case in point. The Washington Metropolitan Area Transit Authority (WMATA) operates the third-largest heavy rail transit system in the country. While average daily bus boardings for the Metrobus system have recovered to about 51 percent of the pre-pandemic level, average daily entries on its Metrorail remain at just 36 percent of the pre-pandemic level. A likely cause: The region has the country's second-largest share of potentially remote workers (surpassed only by the San Francisco Bay Area), according to recent research.

Fewer commuters mean fewer fares collected. According to data from the American Public Transit Association,

a nonprofit advocacy group for the transit industry, fare revenue covered an average of 23 percent of total transit expenses from 2015 to 2019. But this share varies by location and transit mode. Fare revenue as a share of expenses was larger for rail than for bus over the past five years — around 33 percent versus 20 percent. Thus, rail systems have been hurt not only by a greater decline in ridership, but also by their greater reliance on fares.

In its most recent strategic plan, WMATA said that “historic low ridership over two years has strained Metro’s operating budget and required \$2 billion in federal assistance.” It called for increased investment over the next decade in transit-oriented developments — densely populated neighborhoods located close to transit hubs. The report notes that stations in more densely developed neighborhoods have recovered riders more quickly, and WMATA hopes that more transit-oriented developments will further increase ridership from new residents, workers, and visitors.

GOING FARE-FREE

A more immediate, and perhaps counterintuitive, way that some transit systems have tried to maintain ridership levels through the pandemic is by eliminating fares entirely. The Greater Richmond Transit Company (GRTC) initially suspended fare collection on its buses in 2020 to minimize contact between passengers and drivers and limit the spread of COVID-19. It has continued that practice throughout the recovery and recently received funding from the Virginia Department of Rail and Public Transportation’s Transit Ridership Incentive Program to help maintain free fares at least through June 2024.

GRTC’s director of planning and scheduling Sam Sink credits this initiative for contributing to the system’s relative success in retaining riders. Ridership on GRTC’s services did fall sharply in March 2020, along with the rest of the country, but recovered much more quickly than in most places. By 2021, ridership had returned to pre-pandemic levels on many of its fixed-route bus lines, and it is now above pre-pandemic levels for the system overall.

“When you remove the friction of the fare box from the decision of whether or not to make a trip, people respond,” says Sink.

The pandemic seems to have increased the number of transit operators looking at free fares. Some of that is a natural response by operators trying to maintain ridership. There is also a growing recognition by localities that if transit riders may be even more disproportionately low-income after the pandemic, there could be redistribution arguments for heavily subsidizing fares. There may be other efficiency gains as well.

“It is great for getting people on the bus quickly because they don’t need to queue up to tap cards or pay money,” says Freedman, who conducted an experiment with Brough and Phillips removing transit fares for low-income riders in King County, Wash. “There are also no confrontations between the driver and nonpayers. So, there are all sorts of

operational advantages that accrue to the transit agencies in addition to the equity benefits.”

And depending on how public transit is funded in a state, eliminating fares can make sense for the operator financially. Sink explains that in Virginia, one of the determinants of how state transit funding is distributed across agencies is ridership.

“When we do better in terms of ridership and put more service out on the street, we get a bigger piece of that pie,” says Sink. “Because our ridership has rebounded so well compared to other agencies in the state, we are projected to max out the amount of money that we can get for operational assistance in the next few years. As a result, we’re netting more money from our formula funding sources than we are losing by getting rid of fare revenue. Now, whether that is a pattern that we can count on continuing remains to be seen.”

Sink says that GRTC is open to making free fares permanent, but it plans to first gather more data during this trial period. Brough, Freedman, and Phillips’ experiment offers a cautionary lesson when it comes to temporary free fare programs. In a 2022 *Regional Science and Urban Economics* article detailing the results of their experiment, the authors noted that when the free fare period ended, ridership largely regressed to its previous level.

“People care about the fare that they’re paying right now,” says Phillips. “If transit is free right now, they will be more likely to ride, but if fares go back into effect, then some people will stop riding or ride less. We didn’t see big changes in behavior where the experience of riding transit thanks to free fares made people more likely to use transit in the future.”

MEETING RIDERS WHERE THEY ARE

Sink attributes GRTC’s success in retaining riders to other factors as well. The operator made an effort to maintain the same level of service throughout the pandemic, and in 2018, it completed an overhaul of its bus routes aimed at providing more service in areas with the highest demand. A 2021 American Public Transportation Association case study noted that this realignment helped ensure that GRTC’s routes better served the workers who could not work from home and were most likely to continue relying on transit during the pandemic.

Other transit operators in the Fifth District have also made the most of the pandemic to rethink how they provide service. Mass transit has always been more difficult to provide in small towns and rural areas because of their lower population density. Most fixed-route rail and bus solutions rely on a critical mass of riders to help justify the cost of the system.

Inspiration for an alternative came from an unlikely source. When the first ride-hailing service, Uber, launched in 2009, it wasn’t long before transit agencies began investigating whether the same technology could enable more flexible, on-demand transportation. Microtransit allows riders to call a van to their doorstep much like an Uber but typically at a subsidized cost. The trade-off is that the vehicle may be

shared with other riders and typically has a limited operating area. Some cities, like Los Angeles, experimented with microtransit pilots prior to the pandemic to improve connections to their fixed transit stops. Initial results from the Los Angeles program were discouraging, with each microtransit trip costing the city twice the average bus trip.

But microtransit may find more of a home in smaller towns. Wilson, N.C., about 50 miles east of Raleigh, has a population just shy of 48,000. For years, its leaders had been looking for ways to improve its fixed-route bus system.

“Our bus system covered about 40 percent of the city and was designed around a time when the downtown was the center of employment,” says Rodger Lentz, Wilson’s assistant city manager. “Wilson’s history was as a tobacco market, and a lot of the warehouses where those auctions occurred were downtown. There was also more manufacturing downtown than there is today.”

Most of Wilson’s main employers today are located in corporate parks along major interstate highways outside the downtown. Expanding the coverage and frequency of the existing bus system to adapt to these changes would have required a larger budget than the city had allocated, so it started looking for another solution that could serve more riders at roughly the same cost.

In September 2020, the city replaced its bus system with a microtransit solution, RIDE. It’s a partnership between the city and Via Transportation, a public transportation company headquartered in New York. Via manages the drivers and the app for requesting a ride. The new microtransit solution covers the entire city and boasts much shorter wait times. In the first month, new riders could sign up for 10 free rides, with subsequent trips priced at \$1.50.

“By the first month, we had surpassed pre-pandemic ridership levels on the fixed-route system,” says Lentz. Today, RIDE averages 18,000 trips a month, compared to 6,000 monthly trips on the old bus system. Fares have increased to \$2.50 a ride, but Lentz says this hasn’t reduced demand, and feedback from rider surveys continues to be overwhelmingly positive. Costs have also gone up, with rising gas prices being one contributor. Wilson’s initial budget for the program of \$1.2 million has grown to \$2.2 million, but on a cost-per-trip basis, RIDE still outperforms the old bus system. And while critics of microtransit have argued that it would be more efficient to use that funding to improve fixed-route solutions, Lentz maintains that in the context of small towns, microtransit may be more

effective at meeting the needs of riders.

“We have built America around the car, so if you lose your ability to drive, you’ve also lost your ability to move about,” says Lentz. “The unemployment rate in Wilson has historically been above the state average, and a survey found that the two biggest reasons that people were unemployed were lack of reliable transportation and lack of day care. The city isn’t in the day care business, but we can be in the transportation business. If this is what it takes to get people meaningfully employed, then it is a fairly small public investment to help solve that problem.”

Based on surveys, Wilson found that half of RIDE customers use it to get to work, and 87 percent of users are employed. The city plans to explore partnerships with local employers to help further defer the costs of using RIDE to connect workers with opportunities. And larger cities are also still experimenting with using microtransit to connect surrounding rural areas to their fixed-route systems. At the end of 2022, GRTC announced that it had received \$4.06 million for that purpose from the Virginia Department of Rail and Public Transportation.

LOOKING AHEAD

Transit systems faced no shortage of challenges before the pandemic, and they continue to navigate many difficulties during the recovery. WMATA continues to deal with the aftermath of an October 2021 metro train derailment. That prompted WMATA to sideline its 7000-series train cars until they could be fully inspected. Increased crime at transit stops has hampered ridership for some systems, like New York City’s subway. And a nationwide shortage of bus drivers has forced some operators, including GRTC in Richmond, to cut back service.

The 2021 Infrastructure Investment and Jobs Act includes more than \$90 billion in funding for public transit over the next five years, some of which is earmarked for projects to modernize transit systems. As transit operators think about how to adapt services to rapidly changing commuting patterns, GRTC’s Sink says that the biggest lesson she learned from the pandemic was the importance of being proactive rather than reactive.

“Having plans on the shelf ready to go will be really important as we go forward,” she says. “Maybe the next big thing isn’t a pandemic, but unexpected things happen all the time.” **EF**

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BY SAM LOUIS TAYLOR

A Brewing Debate Over ESG

Public companies, including banks, are being pressured by activists and some investors to disclose more information about the real-world effects of their activities — an effort known as the Environmental, Social, and Governance (ESG) movement. While the “E” (for environmental) often garners the most attention, ESG encompasses a broader range of issues and practices. As a result of this controversy, a debate is underway over ESG-related disclosure requirements.

This movement, which was first mentioned in a modern context in a 2004 United Nations report, is the newest iteration of a long line of efforts to push companies to promote goals that serve a broader audience of stakeholders than simply investors. The idea of socially focused business practices goes back to the anti-slavery investing practices of Quakers during the 1700s, the labor organizing and industrialist-led philanthropy movement starting in the 1800s, and the apartheid divestment campaigns of the 1970s and '80s. In the modern era, the ESG movement has been pushing businesses to identify, and often to mitigate, risks related to a broad range of topics, including climate change, biodiversity, supply chains and labor standards, community relationships, and executive pay.

Though support for ESG efforts does not easily break down along standard political lines, Democrats at the federal and state level are generally seen as supporting greater use of ESG metrics and reporting by businesses. This includes proposed requirements by the Securities and Exchange Commission (SEC) of disclosures related to a public company's effects on climate change, as well as efforts in Congress to require disclosure of the racial, gender, ethnic, and veteran composition of their boards and senior

executives. Supporters of these efforts by the SEC argue that the additional transparency will make it easier for investors to hold companies accountable for their environmental promises, ensuring, for example, that corporate promises on combating climate change reflect genuine efforts and are not simply marketing ploys. Supporters of the board diversity proposal, such as Rep. Greg Meeks, D-N.Y., argue that

In the modern era, the ESG movement has been pushing businesses to identify, and often to mitigate, risks related to a broad range of topics.

it can be a tool to push the leadership of public companies to better reflect the demographics of the nation. At the end of the day, supporters argue, investors are driving the demand for greater disclosures of ESG information. In their view, if the market is driving this decision, then government should assist them in that effort or, at least, not stand in their way.

The opposite side of this argument is perhaps best summed up by a famous 1970 essay from economist Milton Friedman, who argued that “there is one and only one social responsibility of business — to use its resources and engage in activities designed to increase its profits so long as it stays within the rules of the game, which is to say, engages in open and free competition without deception or fraud.” Friedman argued that since corporate funds belong to shareholders, not executives, companies should invest their resources in creating profits and then return excess earnings to shareholders who can then use those

earnings on any social or political cause as they see fit.

In the policy realm, some Republicans at the federal and state level see ESG requirements as a Trojan horse for pushing a specific political agenda. Many states, including Texas and West Virginia, have passed specific laws that ban their state agencies and pension funds from doing business with firms that “boycott” energy and fossil fuel companies, industries of importance to those two states. In Congress, Republicans, led by House Financial Services Chairman Patrick McHenry, R-N.C., have announced a broader review of ESG-related policies, including an effort to push the SEC to back away from its proposed disclosure rule related to climate change. There are proposals from other members that would prohibit banks from refusing to lend to certain industries, such as fossil fuel companies and firearm manufacturers, in the pursuit of environmental or social goals. On Jan. 14, 2021, during the closing days of the Trump administration, the Office of the Comptroller of the Currency issued a rule banning such policies on the part of certain financial institutions that it regulates; the agency put the rule on hold later that month.

While McHenry says he sees value in promoting responsible corporate governance, an issue that does have “a significant bearing on economic outcomes,” he wants to make sure that corporations can “focus on their key knitting” and allow Congress to take the lead on tackling complex political problems.

“Governance does matter,” McHenry stated at a December 2022 event hosted by CNBC, “but when we get into the question of environmental policy, it’s necessary for Congress to tackle climate change.” **EF**

BY JOHN MULLIN

The Fed, the Stock Market, and the “Greenspan Put”

Does the Fed ease monetary policy after large stock market declines? Should it?

Market commentators noticed a pattern during Alan Greenspan’s tenure as Fed chair from 1987 to 2006. The Fed, it appeared to some, had developed a policy of bailing out stock investors by injecting liquidity into the economy amid large stock market declines. This perceived tendency came to be called the “Greenspan put.”

By most accounts, the notion of a Greenspan put had its genesis in the Fed’s reaction to the stock market crash of Monday, Oct. 19, 1987.

Concerned that the unprecedented market decline might provoke credit and liquidity problems in the broader financial markets, the Fed had opened its liquidity spigots and subsequently cut its short-term interest rate target.

The “put” notion grew in 1998, when the Fed cut rates out of concern about the deteriorating state of global credit markets.

By 2001, the idea of a Greenspan put had become widespread. In January of that year, following a Fed rate cut, the *Financial Times* stated, “It’s official: there is a Greenspan put option. Yesterday’s half a percentage point interest rate cut by the U.S. Federal Reserve may not have been designed explicitly to bail out the stock market. But that is exactly what it is in danger of doing.”

The phenomenon became known as a “put” because it was seen by some observers as offering downside protection to equity investors — somewhat akin to an equity put option, which gives an investor the right to sell a stock (or basket of stocks) at a pre-specified price, thereby limiting the investor’s loss in the event of a major

market decline. Of course, no one took the “put” part of the “Greenspan put” phrase too literally. There was never any expectation that the Fed would offer investors the precise and bankable protection afforded by an equity put option. The idea was fuzzier: that the Fed could be counted on to provide some sort of liquidity backstop in the event of a major stock market decline.

The consensus view among economists and policymakers, then and now, is that there really is no such thing as a Greenspan put or Fed put — at least not as a policy designed to bail out stock market investors. According to this view, Fed liquidity injections to deal with liquidity crises or weakening economic activity may sometimes have the effect of buoying stock prices. However, as one economist put it, “it is a fundamental misreading of monetary policy to believe that the stock market per se is an objective of policy.” Still, to the extent that market participants believe in the “put,” it can shape market expectations and make things more complicated for policymakers.

WHENCE THE GREENSPAN PUT?

The emergence of the Greenspan put as a widespread notion about Fed behavior owed much to two factors: The first was an abiding desire among Fed policymakers to avoid repeating the perceived mistakes of the Great Depression; the second was a salutary, yet perplexing, new development that came to be dubbed “Goldilocks.”

During the Fed’s early years, prior to the Great Depression, many policymakers and academics were inclined to



Alan Greenspan served as Fed chair from 1987-2006.

conflate macroeconomic stabilization policies with policies designed to bail out individual firms — the type of bailouts that can create moral hazard problems by shielding investors from the consequences of their bad decisions, thereby encouraging them to take excessive risks. It was this concern that informed Treasury Secretary Andrew Mellon in the early 1930s when he gave his infamous policy advice to President Herbert Hoover: “Liquidate labor, liquidate stocks, liquidate the farmers, liquidate real estate.”

Some economic historians, including former Fed Chair Ben Bernanke, have pushed back against the idea that the stock market crash of 1929 was one of the primary causes of the Great Depression. Still, there is

IMAGE: BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM

little doubt that the market's massive decline between 1929 and 1932 signaled and contributed to deepening economic distress. The Fed's failure to heed deflationary signs — particularly shrinking monetary aggregates — later came to be recognized as a major policy mistake, thanks in large part to the historical analysis of Milton Friedman and Anna Schwartz as well as later research by Bernanke.

Based on the lessons learned, the Fed developed a much more activist stance in the post-World War II period and became increasingly inclined to extend credit during crises. The Fed did some of the groundwork for expanding its lender of last resort function in the late 1960s, well before Alan Greenspan's tenure as Fed chair. And it was not long before the Fed began to act on it. In 1970, after the default of the Penn Central railroad, the Fed provided liquidity to support the commercial paper market. In 1974, the Fed made a \$1.7 billion loan to Franklin National Bank to provide support for financial markets, even though policymakers recognized that the bank was likely to fail.

Upon taking his post in August 1987, Greenspan was soon confronted with an unprecedented crisis. From today's perspective, looking at a long-term price chart of the major U.S. stock indexes, it is hard to even identify Black Monday, the stock market crash of October 1987. It looks like a minor dip. Yet it was a scary event for market participants at the time. The Dow Jones Industrial Average declined by 23 percent — a record single-day loss that still holds. The stock rout — which had been exacerbated by automated sell orders associated with portfolio insurance — spread across global stock markets and raised fear among policymakers that it could have adverse effects on credit markets.

On the day following the crash, Greenspan issued a statement affirming the Fed's "readiness to serve as

a source of liquidity to support the economic and financial system." Behind the scenes, the Fed made credit available to banks and encouraged them to continue lending to securities firms on regular terms. The Fed intervened to cut short-term interest rates, a move that reversed the trajectory of increasing rates that Greenspan's Fed had initiated scarcely two months before. Stock markets subsequently

The Fed did some of the groundwork for expanding its lender of last resort function in the late 1960s, well before Alan Greenspan's tenure as Fed chair.

stabilized, and the Fed reversed course and began increasing rates by the middle of 1988.

The October 1987 intervention became the first part of the Greenspan put lore. Yet to some analysts, the Fed's actions on that occasion hardly amounted to a put option. "I don't see his statement as so much a put option," says S&P Global economist Ken Matheny. "It was more of a reminder to the public that the Fed was prepared to act as a liquidity-provider of last resort." Nevertheless, it may have felt like a put option to many equity investors when the major stock indexes reached new highs two years later.

ENTER GOLDBLOCKS

A second episode that figured prominently in Greenspan put lore was the Fed's intervention following the September 1998 collapse of hedge fund Long-Term Capital Management (LTCM). That incident was intimately tied to distress in emerging markets — namely the Asian financial crisis, which began in 1997, and the Russian devaluation/default in August 1998. Not only did the Fed cut rates, it also encouraged private lenders to provide emergency funding to LTCM to avoid what may have been a disruptive unwinding of its portfolio positions. The

Clinton administration and Congress supplemented these measures by agreeing to inject fresh capital into the International Monetary Fund to help stabilize conditions in emerging markets.

The 1998 episode — like that of 1987 — was frightening to market participants. It felt like the onset of a full-blown credit crisis. Consequently, there was a lot of agreement about the wisdom of the Fed's choice to cut rates. One criticism, however, was that the Fed did not reverse the rate cuts quickly enough after global markets had stabilized.

Indeed, it was not until the middle of 1999, amid a booming stock market, that the Fed reversed course and began to increase short-term interest rates. Former Fed Gov. Frederick Mishkin later stated that the Fed's rate cuts following the LTCM episode were "a brilliant stroke" but that he was concerned about the impression the Fed had created by waiting so long to reverse course. Speaking at a later FOMC meeting, he said, "I don't know about a Greenspan put, but there was some element of that — and it is very hard to dissipate that impression."

Not too long thereafter, however, Greenspan turned noticeably hawkish — a policy shift that is sometimes neglected in discussions about Fed policy in the late 1990s. Testifying before Congress in February 2000, he expressed his belief that the U.S. economy suffered from excess aggregate demand, and he identified booming stock prices as a primary culprit. On prior occasions in the late 1990s, Greenspan had mused about stock market overvaluation, using the term "irrational exuberance." Now, it seemed, he was doing something to counter the situation. The Fed ended up increasing its short-term interest rate target by 1.75 percentage points between June 1999 and May 2000.

A third episode in the lore took place when the Fed cut short-term interest rates amid declining equity prices in

January 2001. (This was the episode that prompted the *Financial Times* to declare that there's "a Greenspan put option.") At the time, it looked to some like the Fed was blinking.

"That episode appeared a little troubling," says Matheny. "To some people, it looked like the Fed was getting the 'willies' and bringing out the Fed put again. In retrospect, though, you need to give Greenspan some credit because we did have a recession in 2001, although it's open to debate whether it would have amounted to an official recession if it were not for 9/11." It turned out that the January 2001 rate cut offered little protection for equity investors. The S&P kept on falling and did not find a bottom until late 2002.

To understand the Fed's behavior during the late 1990s, it is crucial to recognize that the U.S. economy appeared to be operating in a sweet spot. The economy avoided recession, and core CPI inflation declined quite steadily on a year-over-year basis. This situation — neither too hot nor too cold — came to be known as Goldilocks. Many observers attributed the subdued inflation to increased productivity. Whatever the cause, inflation remained subdued and that gave the Fed additional scope to intervene and supply liquidity to the market.

"I know that the Fed was definitely worried about inflation at the time," says Anna Cieslak of Duke University, who has analyzed the Fed's internal deliberations during the period. "Had inflation materialized, they may have taken a more hawkish stance. But, in this period, inflation kept on coming in lower than expected."

LOOKING FOR PATTERNS

By 2007, as the U.S. economy began to show increasing signs of weakness, the idea of a Greenspan put appeared to be casting a shadow over Federal Open Market Committee (FOMC) deliberations. The transcript of the August

2007 meeting shows that no fewer than five FOMC members mentioned the put explicitly. There was some indication that the notion was making committee members more reluctant to ease policy. Mindful of discussions about the put in the financial press, Richard Fisher, then president of the Dallas Fed, said, "I want to make sure that we do not take any action or say anything

"The statistical fact is that, since the mid-1990s, the Fed has tended to lower rates by an average of about 1.2 percentage points in the year after a 10 percent stock market decline," says Cieslak.

that might give rise to an expectation that such is to occur. Therefore... I am in favor of keeping the rate where it is." Despite some reluctance, the Fed soon started cutting short-term interest rates.

Shortly thereafter, William Poole, then president of the St. Louis Fed, addressed the conundrum facing Fed policymakers, arguing that they should not let apprehension about a Greenspan put get in their way. He allowed that "there is an element of truth to the argument that Fed policy can limit downside risk in the stock market. The same Fed policy that succeeds in stabilizing the price level and the real economy should tend to stabilize financial markets as well." But Poole had little concern that such a policy would create a moral hazard problem by shielding businessmen and financial market participants from the consequences of their bad decisions. He concluded, "It makes no sense to let the economy suffer from continuing declines in stock prices for the purpose of 'teaching stock market speculators a lesson.'"

Poole also presented evidence that was inconsistent with the notion that the Fed had, up to that point, systematically eased policy following large stock market declines. He presented data on Fed reactions to stock market declines of 10 percent or

more during 1950-2006. There were 21 such episodes. In roughly half of the cases, the Fed held rates steady or increased them. In the other half, the Fed lowered rates around the time of the market peak, although it was often the case that the rate declines began before the market's peak. This evidence seemed to run against the notion that the Fed had automatically responded to equity market declines by cutting interest rates.

A more recent study, co-authored by Cieslak and Annette Vissing-Jorgensen of the Fed Board of Governors, suggests that the Fed changed its behavior in the mid-1990s. "The statistical fact is that,

since the mid-1990s, the Fed has tended to lower rates by an average of about 1.2 percentage points in the year after a 10 percent stock market decline," says Cieslak. "This pattern emerges in the post-1994 period — it's not really there in the data before that." Moreover, they found that Fed interest rate changes following stock moves have been asymmetric — that is, the Fed's rate hikes following stock market increases have tended to be muted in comparison to its rate cuts following market declines.

Examining the language of FOMC minutes and transcripts, Cieslak and Vissing-Jorgensen found that the Fed pays significant attention to stock market developments. In addition, they found that "discussions of stock market conditions by the FOMC attendees are most frequently cast in the context of consumption, with the consumption-wealth effect highlighted as one of the main channels through which the stock market affects the economy."

Their findings are consistent with the view that stock market declines affect monetary policy by reducing policymakers' growth expectations. Since the mid-1990s, negative stock market movements between FOMC meetings have been strong predictors of subsequent downgrades to the Fed's

GDP growth forecasts. Comparing the Fed's forecast revisions to those of private sector forecasters, the researchers found "little evidence for the Fed overreacting to the stock market."

Not all researchers are so sanguine. In a 2017 paper, Sandeep Dahiya and Bardia Kamrad of Georgetown University, Valerio Poti of University College Dublin, and Akhtar Siddique of the Office of the Comptroller of the Currency found evidence of a Fed put in the prices of traded equity options. They expressed concern about the moral hazard problems associated with this "implicit down-side guarantee."

MODELING POLICY RESPONSES TO MARKET DECLINES

Economists have devoted much effort to building economic models that help them better understand the relationship between stock prices and optimal monetary policy. In an influential paper published in 1999, Ben Bernanke of the Brookings Institution and Mark Gertler of New York University examined optimal monetary policy in a model economy in which random stock market movements influence aggregate demand. They concluded, "Given a strong commitment to stabilizing expected inflation, it is neither necessary nor desirable for monetary policy to respond to changes in asset prices, except to the extent that they help to forecast inflationary or deflationary

pressures." In their model, the optimal approach for policymakers is to gather information about the economy from stock prices without attempting to target them. Thus, a large market decline may provoke a loosening of policy — not because the central bank wants to support stock prices *per se*, but because the stock decline signals weakening economic activity.

Economists have also explored the potential pitfalls for policymakers of reacting to stock market swings. A common concern is that, by cutting rates in reaction to large stock market declines, policymakers may engender expectations that they will do so again in the future under similar circumstances. This, the argument goes, encourages excessive borrowing and leverage. Studies that address this issue are part of a broad economics literature devoted to exploring the potential moral hazard problems associated with countercyclical policies — a literature that goes well beyond the Fed's reactions to stock swings to analyze a host of policies, including deposit insurance and the prudential regulation of banks' capital adequacy.

In a 2018 article, "Moral Hazard Misconceptions: The Case of the Greenspan Put," Gideon Bornstein of the Wharton School and Guido Lorenzoni of the University of Chicago's Booth School of Business presented a model that bucks the notion that central banks promote excessive risk-taking by easing

monetary policy during crises. In their framework, a more actively interventionist monetary policy decreases the need for regulation to rein in excessive risk-taking by banks.

The traditional notion, according to the researchers, is that monetary policy and bank regulatory policy are complementary. "The view is that the two things go together," says Bornstein. "If you want to have a more active monetary policy, you better have more regulation." The paper's model, however, demonstrates that countercyclical monetary policy can, by smoothing the economic cycle, reduce economic distortions that encourage overborrowing. In this way, according to Bornstein, it is possible for a more active monetary policy to actually reduce the load that needs to be carried by prudential regulation.

And what about the notion of a Greenspan put, which arose out of the real-world exercise of such monetary policy activism? As always, it depends on who you ask. To some skeptics, it amounted to free insurance for aggressive risk-taking. Former Fed vice chair Alan Blinder, on the other hand, expressed little sympathy for this view in a 2005 paper, stating, "If the critics are complaining that the Greenspan Fed's success in stabilizing inflation and economic activity reduced the perceived level of macroeconomic risk, we are totally unsympathetic — for that is precisely what a central bank is supposed to do." **EF**

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Averting a Treasury Market Crisis

The Treasury bond market suffered a liquidity crisis at the start of the COVID-19 pandemic. What reforms are needed to make sure it doesn't happen again?

BY MATTHEW WELLS

The U.S. government bond market sits at the foundation of the global financial system. This \$24 trillion market finances the U.S. government's debt and serves as the benchmark for a host of other markets, including the mortgage, corporate debt, and municipal bond markets. Treasury bonds — often called simply “Treasury” — serve as collateral for loans the world over, and investors, including pension funds and foreign governments, value the bonds as both investments and quick sources of cash in times of need. Indeed, U.S. banking regulations consider Treasuries to be high-quality liquid assets, essentially making them as good as cash.

In March 2020, however, uncertainty regarding the short-term functioning of global markets brought on by the COVID-19 pandemic led many holders of these securities, and those holding other sovereign bonds, to convert them to cash all at once. This strained bond markets around the world, as the influx of securities for sale led to a significant drop in prices, not just in the United States, but in Germany, Great Britain, and Japan, as well. The problem was most acute for the United States, however, due to the dollar's role as the world's dominant currency and as an investment.

During the crisis, bid-ask spreads (the difference between the buy and sell prices offered by market makers) widened, and intermediaries were unable to find buyers for the bonds at listed prices. At this point, the Fed intervened and, acting as the buyer of last resort, bought approximately \$1 trillion worth of Treasuries by the end of the first quarter of 2020, restoring liquidity to the bond market.

Concerns lingered afterward. An analyst report from Bank of America in September argued that “declining liquidity and resiliency of the Treasury market arguably poses one of the greatest threats to global financial stability today.” A *Wall Street Journal* article about Treasuries that month came with the cheery headline, “Bond Market Liquidity is Really Bad Right Now.”


Why is market liquidity so important? While daily — and sometimes dramatic — fluctuations in Treasury prices, such as the “flash crashes” of October 2014 and September 2019, affect traders' bottom lines, price volatility stemming from a shock like that in 2020 can have far more dire consequences for the entire economy. If, in the face of some calamitous shock, sellers simultaneously sought to cash out and were unable to locate ready buyers for Treasuries, the market could grind to a halt, freezing all other markets as well. In other words, lending at almost every level would cease and borrowers ranging from the federal government to homeowners would potentially default.

As a practical matter, the Fed would likely intervene to prevent such a scenario from fully playing out. But recent reports suggest the Treasury market is again encountering liquidity challenges, with regulators and policymakers acknowledging that, while the market is well-functioning now with trading volume averaging about \$600 billion per day, some changes to its structure are necessary to avoid a repeat of March 2020 or worse. In an October 2022 speech on the topic, Treasury Secretary Janet Yellen stated that reforms are being considered to “improve the Treasury market's ability to absorb shocks and disruptions, rather than to amplify them.”

What is driving the market's uncertainty, and what steps can be taken to ensure its resilience?

DIFFERENT SECURITIES, DIFFERENT LIQUIDITY

What does it mean for an asset to be “liquid”? At a very basic level a liquid asset is one that can quickly be converted into cash. Market depth is one measure of liquidity, capturing the ability of Treasury sales and purchases to be made without moving prices. Sellers, as well as market-making intermediaries such as investment banks, want to be able to sell potentially large quantities of Treasuries for cash without



“It is actually the off-the-runs that were the epicenter of the crisis. The biggest sellers were those that had set them aside for a rainy day, and that day arrived when the World Health Organization announced a COVID pandemic.” — Darrell Duffie

the price falling. When the market lacks depth, those sellers can sell some of them to the highest bidder, but if that buyer doesn't want to purchase all of them at that price, then the rest are sold to bidders offering lower prices. Alternatively, a seller can split its order, selling some now to the highest bidder and then waiting for a buyer to emerge who offers a higher price, but waiting can be costly and uncertain. This scenario generally arises when trading volume for a security is low, as it signals a lack of demand for that security.

Liquidity within the market also can differ depending on the age and maturity of a given Treasury. On-the-run Treasuries are securities that are newly issued and are available for purchase from the Treasury Department on a set schedule. Once purchased via auction, they are desirable on the secondary market and, because of that desirability, sell at a higher price. Most of the \$600 billion in daily trading volume involves “on-the-run” Treasuries.

“Off-the-run” Treasuries, in contrast, are securities that are older than the latest issue sold at auction. They are generally less liquid, sometimes taking longer to find buyers at listed prices. They are typically cheaper than “on-the-run” securities, however, and come with a slightly higher yield. Many of these securities are held until their maturity by mutual funds, pension funds, foreign central banks, or foundations.

Similarly, Treasuries with shorter maturities carry less risk and can partially avoid the market turbulence (that is, interest rate changes, inflation, and so on) that can accompany bonds with longer maturities. As the market becomes more volatile in terms of rates, it becomes less liquid, meaning it can take longer to sell those longer-maturity Treasuries.

In March 2020, rather than continue to hold onto them until their maturity as they would in normal times, many entities holding off-the-run securities sought to convert them to cash in the face of the economic uncertainty. Dealers, as a result, accumulated large inventories of both on-the-run and off-the-run securities and essentially ran out of balance sheet “space” — that is, they hit the limit on what financial regulations permitted them to hold with a given amount of capital. As a result, bid-ask spreads increased, and market depth deteriorated. “It is actually the off-the-runs that were the epicenter of the crisis,” says Darrell Duffie, an economist at Stanford University. “The biggest sellers were those that had set them aside for a rainy day, and that day arrived when the World Health Organization announced a COVID pandemic.”

WHAT'S DRIVING THE UNEASE?

The Fed's November 2022 Financial Stability Report indicated that Treasury market liquidity was at its worst levels since the events of March 2020. If the market is generally

seen as stable and volume is high, how is this possible?

First, large banks and investment firms, known as primary dealers, have taken on a lot of Treasury inventory already. The Treasury Department has issued a tremendous amount of debt in recent years, with total public debt rising from \$3.6 trillion in 2002 to about \$24.6 trillion today. In purchasing these bonds, dealers are potentially running out of room on their balance sheets, leading them to be much less active in both initial purchases and as intermediaries on the secondary market.

Balance sheet space is dictated in part by the Supplementary Leverage Ratio (SLR) requirements included in the post-financial-crisis-era reforms that were intended to make the financial system safer. While the reforms encouraged dealer banks to hold high-quality assets like Treasuries, the SLR required banks with over \$250 billion in assets to keep at least 3 percent of the value of those assets in stockholder equity. According to Francisco Covas, head of research at the Bank Policy Institute, however, “the key constraint of bank balance sheets in intermediating Treasury markets is the supplementary leverage ratio.” Covas notes that the ratio's formula reflects a previous policy framework that sought to draw banks' reserve balances down to around \$25 billion. The current framework, however, aims to keep balances around \$2.3 trillion. If a bank increases its Treasuries inventory, that might require it to hold more capital, reducing its ability to lend and make a profit. Dealers, as a result, may not be willing to take on more assets, as they would need to hold additional capital to not run afoul of the ratio requirements.

Second, unease may also stem from volatility and uncertainty surrounding the timeline of the Fed's monetary policy as it battles inflation. “The recent volatility in monetary policy and uncertainty over how long it will take to bring inflation down and how high rates need to go has led to a reduction in inventory to fill a balance sheet,” says Covas. The November Financial Stability Report acknowledged that unease, noting that market depth for two- and 10-year on-the-run Treasuries fell considerably between October 2021 and April 2022. To avoid the volatility in these bonds with longer maturities, many market participants have concentrated their attention in the “short end” of the market, or the short-term bonds with around three-month maturities.

Further, as these primary dealers have stepped back, hedge funds and high-speed traders have stepped in as a potential source of liquidity. A 2015 joint regulators' report examining the “flash crash” on Oct. 15, 2014, noted that these firms, known collectively as principal trading firms, now account for the majority of trading and provide most of the market depth.



"I think stigma on borrowing from the Federal Reserve is a big deal and a problem. It prevents the Fed from performing an important function that it was founded for in 1913." — Don Kohn

But they are less regulated and bring significant leverage into the market, which can fuel instability. In March 2022, the Securities and Exchange Commission proposed a rule requiring such firms with at least \$25 billion in monthly trading volume to register with the agency and meet tougher transparency and capital requirements; the proposal is still under consideration.

Finally, foreign central banks facing currency crises at home often sell Treasuries for dollars, which they use to buy and support their own currencies. Amid the uncertainty of March 2020, foreign central banks sold a record \$109 billion in Treasuries, although such moves are consistent with their response to similar global events. Currently, the largest single foreign holder of Treasuries is the Bank of Japan. In November 2021, its holdings totaled \$1.3 trillion but decreased to \$1.08 trillion in the year since then. Partly as a result of the bank's accommodative monetary policy, the value of the yen decreased and the bank's response was to intervene by selling Treasuries and using the cash to shore up the yen in currency markets. The resulting sale of \$250 billion in Treasuries into an already uncertain market might be further reducing its depth.

SHORING UP THE SYSTEM

Regulators are examining several potential reforms aimed at restoring the Treasury market's depth so that it will be able to withstand future shocks.

In October of last year, the Treasury Department surveyed primary dealers, asking for their views on the possibility of it buying back from them relatively illiquid off-the-run securities such as 20-year bonds. Dealers expect a decision on whether to proceed with buybacks and to what degree early this year. Gennadiy Goldberg, a rates strategist at TD Securities, believes the move would help market liquidity. "Buybacks would allow banks to get [bonds] off their balance sheet when there are no buyers," he said, "and would allow them to use their balance sheet more efficiently."

One change already in place that has the potential to reduce stress on the market was the Fed's creation of a standing repo facility in the summer of 2021. (See "The Fed's Evolving Involvement in the Repo Markets," *Economic Brief*, September 2021.) Rather than sell their Treasuries, eligible firms, mainly the primary dealer banks, can use the facility to quickly convert their Treasuries into overnight cash loans to satisfy their short-term cash needs. The repo facility has not been used since its creation, as the dealers and banks eligible to use it still have plenty of cash following the Fed's pandemic-era quantitative easing policy. It remains an open question, however, how much these actors will use the facility once their cash

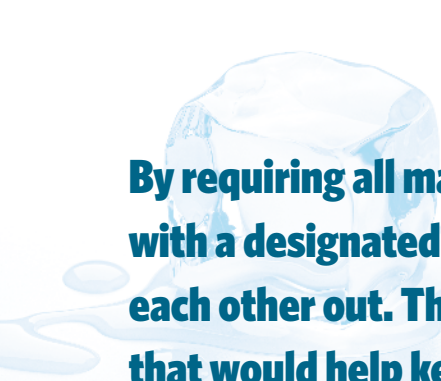
holdings decline. Some observers believe that certain Fed lending programs, such as the discount window, carry a stigma because their use signals that the borrower may be in weakened financial condition. (See "Understanding Discount Window Stigma," *Economic Brief*, April 2020.) "I think stigma on borrowing from the Federal Reserve is a big deal and a problem," says Don Kohn, a former vice chair of the Fed now at the Brookings Institution. "It prevents the Fed from performing an important function that it was founded for in 1913."

Observers suggest that there may be ways to mitigate this potential reluctance. In particular, Duffie argues that the Fed could improve the terms for using it, lowering the cost from 25 basis points — a relatively high and painful price — to a number that would both incentivize firms to use it and not signal that the user was in poor financial condition. "Then it's not such a big news story when somebody uses it," he says.

Currently, access to the repo facility is restricted to a relatively narrow set of counterparties, which includes primary dealers and depository institutions, but some market participants and observers agree that it should be expanded. At a recent New York Fed conference on the Treasury market, Jeremy Stein, a former Fed governor now at Harvard University, suggested that some of the problems of March 2020 might have been reduced if more actors, such as hedge funds and mutual funds, were allowed to access cash through the facility in times of stress. "If they knew for sure that they could come to the Fed," said Stein, "they might have held fire a little bit and not sold."

Regulators are also considering the possibility of adjusting the capital requirement framework. The SLR requirements were created in the wake of the global financial crisis, after several large banks did not have enough capital on hand to cover losses they experienced as asset values declined. To facilitate lending at the beginning of the pandemic, both reserves and Treasuries were exempted from the SLR calculations, which were last adjusted in 2014 under a different monetary policy framework when banks held dramatically fewer reserves.

While the exemption expired in March 2021, there is broad-based agreement that the ratio requirement should be adjusted in some way. Duffie claims that it "is unnecessarily reducing liquidity, and with no cost to financial stability, you could dial that one down and increase risk-based requirements to compensate for it. Financial stability and market efficiency would then be better." Kohn offers a similar judgment, suggesting that one approach would be to exempt reserves or Treasuries, or both, and raise the leverage ratio on other assets by whatever small



By requiring all market participants to register and clear their transactions with a designated intermediary such as the FICC, all transactions could cancel each other out. This could free up space on balance sheets for ongoing trading that would help keep the market liquid.

amount necessary to neutralize the change. At the same time, he notes the risk-based capital requirements could be increased by adding a more actively used countercyclical capital buffer. Covas says that removing reserve balances and Treasuries from the leverage ratio is the key reform being pursued by the banking industry. These reforms have yet to be put into place, however, reflecting the complex balancing of costs and benefits involved in designing effective capital regulation.

BOLDER CHANGES TO THE MARKET STRUCTURE

More ambitious reforms are also on the table. An October 2022 New York Fed Staff Report explored the costs and benefits of “all-to-all” trading, which would constitute a significant change in the market’s structure. Under this system, buyers and sellers would no longer rely on intermediation by the large banks to conduct transactions. Instead, they would engage directly with one another, and those transactions would be guaranteed by a third party. While no decisions have been made, the report states that all-to-all trading would “encourage market resilience by providing additional opportunities for trading partners to match on a trade without use of an intermediary” and result in “lower transaction costs for liquidity consumers and could improve transparency around trade data.”

Transparency would be enhanced because under such a structure, all market participants would have the same real-time ability to see transactions taking place within the market. Everyone would know the prevailing price for a given security, leading to better matching between sellers and buyers. This move to more real-time reporting, however, raises some red flags for dealers. Some trades are very large and executing an entire deal can take time and occur in several steps. “If this information is available in real time,” says Covas, that “would allow market participants to position against market makers and increase the

costs of intermediating in Treasury markets.”

Regulators and policymakers are aware of this concern and are currently implementing incremental changes. At the recent Treasury market conference in New York, Treasury Under Secretary for Domestic Finance Nellie Liang announced that the department would be pursuing the release of end-of-day transaction data for on-the-run Treasuries. This would be a first step, but she also suggested that even though the department will be “starting gradual and in a calibrated way,” she anticipates eventually releasing transaction data after 60 minutes, which “would be beneficial and would still allow sufficient time for market participants to handle large transactions.”

An intermediate step along the way to an all-to-all market structure is mandated and expanded “central clearing.” Today, only primary dealers are obligated to submit their transactions to a central counterparty, the Fixed Income Clearing Corporation (FICC). A 2021 interagency working group report noted that only 13 percent of all Treasury cash transactions are centrally cleared. By requiring all market participants to register and clear their transactions with a designated intermediary such as the FICC, all transactions, not just those between dealers, could cancel each other out, a concept known as “netting.” This could free up space on balance sheets for ongoing trading that would help keep the market liquid.

Ultimately, regulators will need to consider how to, as Kohn said in an August 2021 speech, “remove impediments to market making ... without reducing the resilience of the banking system.” Similarly, Duffie suggests that if regulatory requirements are relaxed too much, “market liquidity is improved on a typical day but not on a crisis day when some big banks might fail.” Market watchers and participants will be paying close attention to see whether the additional steps taken to improve the functionality of the Treasury market — if any — will be enough to withstand whatever turbulence might lie ahead. **EF**

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BY MATTHEW WELLS

A Short History of Long-Term Mortgages

Americans take today's selection of mortgages for granted, but financing a home is a much different experience than it was a century ago

The furniture industry was booming in Greensboro, N.C., 100 years ago. A furniture craftsman making a solid, steady income might have wanted to buy a home and build up some equity. But the homebuying process then looked very little like it does today. To finance that purchase, the furniture maker first would need to scrape together as much as 40 percent for a down payment, even with good credit. He might then head to a local building and loan association (B&L), where he would hope to get a loan that he would be able to pay off in no more than a dozen years.

Today's mortgage market, by contrast, would offer that furniture maker a wide range of more attractive options. Instead of going to the local B&L, the furniture maker could walk into a bank or connect with a mortgage broker who could be in town or on the other side of the country. No longer would such a large down payment be necessary; 20 percent would suffice, and it could be less with mortgage insurance — even zero dollars down if the furniture maker were also a veteran. Further, the repayment period would be set at either 15 or 30 years, and, depending on what worked best for the furniture maker, the interest rate could be fixed or fluctuate through the duration of the loan.

The modern mortgage in all its variations is the product of a complicated history. Local, state, national, and even international actors all competing for profits have existed alongside an increasingly active federal government that for almost a century has sought to make the benefits of homeownership accessible to more Americans, even through economic collapse and

crises. Both despite and because of this history, over 65 percent of Americans — most of whom carry or carried a mortgage previously — now own the home where they live.

THE EARLY ERA OF PRIVATE FINANCING

Prior to 1930, the government was not involved in the mortgage market, leaving only a few private options for aspiring homeowners looking for financing. While loans between individuals for homes were common, building and loan associations would become the dominant institutional mortgage financiers during this period.

B&Ls commonly used what was known as a “share accumulation” contract. Under this complicated mortgage structure, if a borrower needed a loan for \$1,000, he would subscribe to the association for five shares at \$200 maturity value each, and he would accumulate those shares by paying weekly or monthly installments into an account held at the association. These payments would pay for the shares along with the interest on the loan, and the B&L would also pay out dividends kept in the share account. The dividends determined the duration of the loan, but in good economic times, a borrower would expect it to take about 12 years to accumulate enough money through the dividends and deposits to repay the entire \$1,000 loan all at once; he would then own the property outright.

An import from a rapidly industrializing Great Britain in the 1830s, B&Ls had been operating mainly in the Northeast and Midwest until the 1880s, when, coupled with a lack

of competition and rapid urbanization around the country, their presence increased significantly. In 1893, for example, 5,600 B&Ls were in operation in every state and in more than 1,000 counties and 2,000 cities. Some 1.4 million Americans were members of B&Ls and about one in eight nonfarm owner-occupied homes was financed through them. These numbers would peak in 1927, with 11.3 million members (out of a total population of 119 million) belonging to 12,804 associations that held a total of \$7.2 billion in assets.

Despite their popularity, B&Ls had a notable drawback: Their borrowers were exposed to significant credit risk. If a B&L's loan portfolio suffered, dividend accrual could slow, extending the amount of time it would take for members to pay off their loans. In extreme cases, retained dividends could be taken away or the value of outstanding shares could be written down, taking borrowers further away from final repayment.

“Imagine you are in year 11 of what should be a 12-year repayment period and you've borrowed \$2,000 and you've got \$1,800 of it in your account,” says Kenneth Snowden, an economist at the University of North Carolina, Greensboro, “but then the B&L goes belly up. That would be a disaster.”

The industry downplayed the issue. While acknowledging that “It is possible in the event of failure under the regular [share accumulation] plan that ... the borrower would still be liable for the total amount of his loan,” the authors of a 1925 industry publication still maintained, “It makes very little practical difference because of the small likelihood of failure.”

Aside from the B&Ls, there were few other institutional lending options for individuals looking for mortgage financing. The National Bank Act of 1864 barred commercial banks from writing mortgages, but life insurance companies and mutual savings banks were active lenders. They were, however, heavily regulated and often barred from lending across state lines or beyond certain distances from their location.

But the money to finance the building boom of the second half of the 19th century had to come from somewhere. Unconstrained by geographic boundaries or the law, mortgage companies and trusts sprouted up in the 1870s, filling this need through another innovation from Europe: the mortgage-backed security (MBS). One of the first such firms, the United States Mortgage Company, was founded in 1871. Boasting a New York board of directors that included the likes of J. Pierpont Morgan, the company wrote its own mortgages, and then issued bonds or securities that equaled the value of all the mortgages it held. It made money by charging interest on loans at a greater rate than what it paid out on its bonds. The company was vast: It established local lending boards throughout the country to handle loan origination, pricing, and credit quality, but it also had a European-based board comprised of counts and barons to manage the sale of those bonds on the continent.

NEW COMPETITION FROM DEPRESSION-ERA REFORMS

When the Great Depression hit, the mortgage system ground to a halt, as the collapse of home prices and massive unemployment led to widespread foreclosures. This, in turn, led to a decline in homeownership and exposed the weaknesses in the existing mortgage finance system. In response, the Roosevelt administration pursued several strategies to restore the home mortgage market and encourage lending and borrowing. These efforts created a system of uneasy coexistence



A couple moves into a new home in Aberdeen Gardens in Newport News, Va., in 1937. Aberdeen Gardens was built as part of a New Deal housing program during the Great Depression.

between a reformed private mortgage market and a new player — the federal government.

The Home Owners' Loan Corporation (HOLC) was created in 1933 to assist people who could no longer afford to make payments on their homes from foreclosure. To do so, the HOLC took the drastic step of issuing bonds and then using the funds to purchase mortgages of homes, and then refinancing those loans. It could only purchase mortgages on homes under \$20,000 in value, but between 1933 and 1936, the HOLC would write and hold approximately 1 million loans, representing around 10 percent of all nonfarm owner-occupied homes in the country. Around 200,000 borrowers would still ultimately end up in foreclosure, but over 800,000 people were able to successfully stay in their homes and repay their HOLC loans. (The HOLC is also widely associated with the practice of redlining, although scholars debate its lasting influence on

lending.) At the same time, the HOLC standardized the 15-year fully amortized loan still in use today. In contrast to the complicated share accumulation loans used by the B&Ls, these loans were repaid on a fixed schedule in which monthly payments spread across a set time period went directly toward reducing the principal on the loan as well as the interest.

While the HOLC was responsible for keeping people in their homes, the Federal Housing Administration (FHA) was created as part of the National Housing Act of 1934 to give lenders, who had become risk averse since the Depression hit, the confidence to lend again. It did so through several innovations which, while intended to “prime the pump” in the short term, resulted in lasting reforms to the mortgage market. In particular, all FHA-backed mortgages were long term (that is, 20 to 30 years) fully amortized loans and required as little as a 10 percent down payment. Relative to the loans

with short repayment periods, these terms were undoubtedly attractive to would-be borrowers, leading the other private institutional lenders to adopt similar mortgage structures to remain competitive.

During the 1930s, the building and loan associations began to evolve into savings and loan associations (S&L) and were granted federal charters. As a result, these associations had to adhere to certain regulatory requirements, including a mandate to make only fully amortized loans and caps on the amount of interest they could pay on deposits. They were also required to participate in the Federal Savings and Loan Insurance Corporation (FSLIC), which, in theory, meant that their members' deposits were guaranteed and would no longer be subject to the risk that characterized the pre-Depression era.

The B&Ls and S&Ls vehemently opposed the creation of the FHA, as it both opened competition in the market and created a new bureaucracy that they argued was unnecessary. Their first concern was competition. If the FHA provided insurance to all institutional lenders, the associations believed they would no longer dominate the long-term mortgage loan market, as they had for almost a century. Despite intense lobbying in opposition to the creation of the FHA, the S&Ls lost that battle, and commercial banks, which had been able to make mortgage loans since 1913, ended up making by far the biggest share of FHA-insured loans, accounting for 70 percent of all FHA loans in 1935. The associations also were loath to follow all the regulations and bureaucracy that were required for the FHA to guarantee loans.

“The associations had been underwriting loans successfully for 60 years. FHA created a whole new bureaucracy of how to underwrite loans because they had a manual that was 500 pages long,” notes Snowden. “They don’t want all that red tape. They don’t want someone telling them how many inches

apart their studs have to be. They had their own appraisers and underwriting program. So there really were competing networks.”

As a result of these two sources of opposition, only 789 out of almost 7,000 associations were using FHA insurance in 1940.

In 1938, the housing market was still lagging in its recovery relative to other sectors of the economy. To further open the flow of capital to homebuyers, the government chartered the Federal National Mortgage Association, or Fannie Mae. Known as a government sponsored-enterprise, or GSE, Fannie Mae purchased FHA-guaranteed loans from mortgage lenders and kept them in its own portfolio. (Much later, starting in the 1980s, it would sell them as MBS on the secondary market.)

THE POSTWAR HOMEOWNERSHIP BOOM

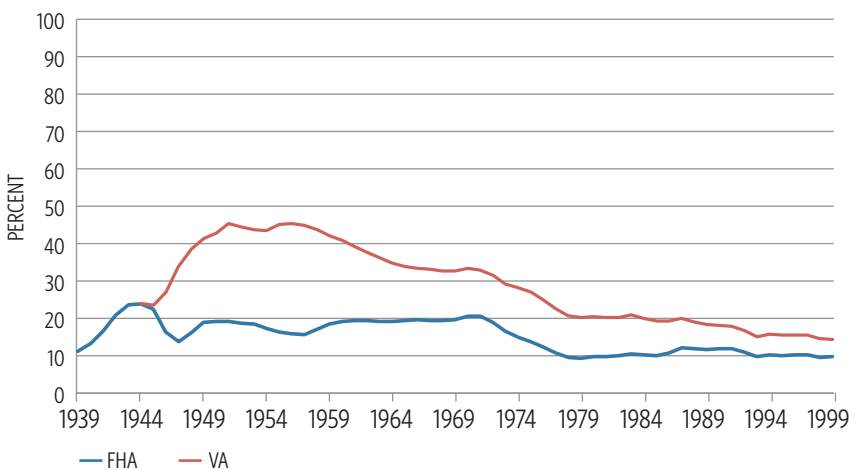
In 1940, about 44 percent of Americans owned their home. Two decades later, that number had risen to 62 percent. Daniel Fetter, an

economist at Stanford University, argued in a 2014 paper that this increase was driven by rising real incomes, favorable tax treatment of owner-occupied housing, and perhaps most importantly, the widespread adoption of the long-term, fully amortized, low-down-payment mortgage. In fact, he estimated that changes in home financing might explain about 40 percent of the overall increase in homeownership during this period.

One of the primary pathways for the expansion of homeownership during the postwar period was the veterans' home loan program created under the 1944 Servicemen's Readjustment Act. While the Veterans Administration (VA) did not make loans, if a veteran defaulted, it would pay up to 50 percent of the loan or up to \$2,000. At a time when the average home price was about \$8,600, the repayment window was 20 years. Also, interest rates for VA loans could not exceed 4 percent and often did not require a down payment. These loans were widely used: Between 1949 and 1953, they averaged 24 percent of the market and according

The FHA and VA Get Uncle Sam Into the Mortgage Insurance Business

Share of all home loans insured by the FHA or VA



SOURCE: Historical Statistics of the United States, Millennial Edition, Series DC929-DC948 via Rose and Snowden (2013)

NOTE: Does not include government-sponsored enterprises

to Fetter, accounted for roughly 74 percent of the overall increase in homeownership between 1940 and 1960. (See chart.)

Demand for housing continued as baby boomers grew into adults in the 1970s and pursued homeownership just as their parents did. Congress realized, however, that the secondary market where MBS were traded lacked sufficient capital to finance the younger generation's purchases. In response, Congress chartered a second GSE, the Federal Home Loan Mortgage Corporation, also known as Freddie Mac. Up until this point, Fannie had only been authorized to purchase FHA-backed loans, but with the hope of turning Fannie and Freddie into competitors on the secondary mortgage market, Congress privatized Fannie in 1968. In 1970, they were both also allowed to purchase conventional loans (that is, loans not backed by either the FHA or VA).

A SERIES OF CRISES

A decade later, the S&L industry that had existed for half a century would collapse. As interest rates rose in the late 1970s and early 1980s, the S&Ls, also known as "thrifts," found themselves at a disadvantage, as the government-imposed limits on their interest rates meant depositors could find greater returns elsewhere. With inflation also increasing, the S&Ls' portfolios, which were filled with fixed-rate mortgages, lost significant value as well. As a result, many S&Ls became insolvent.

Normally, this would have meant shutting the weak S&Ls down. But there was a further problem: In 1983, the cost of paying off what these firms owed depositors was estimated at about \$25 billion, but FSLIC, the government entity that ensured those deposits, had only \$6 billion in reserves. In the face of this shortfall, regulators decided to allow these insolvent thrifts, known as "zombies," to remain open rather than figure out

how to shut them down and repay what they owed. At the same time, legislators and regulators relaxed capital standards, allowing these firms to pay higher rates to attract funds and engage in ever-riskier projects with the hope that they would pay off in higher returns. Ultimately, when these high-risk ventures failed in the late 1980s, the cost to taxpayers, who had to cover these guaranteed deposits, was about \$124 billion. But the S&Ls would not be the only actors in the mortgage industry to need a taxpayer bailout.

By the turn of the century, both Fannie and Freddie had converted to shareholder-owned, for-profit corporations, but regulations put in place by the Federal Housing Finance Agency authorized them to purchase from lenders only so-called conforming mortgages, that is, ones that satisfied certain standards with respect to the borrower's debt-to-income ratio, the amount of the loan, and the size of the down payment. During the 1980s and 1990s, their status as GSEs fueled the perception that the government — the taxpayers — would bail them out if they ever ran into financial trouble.

Developments in the mortgage marketplace soon set the stage for exactly that trouble. The secondary mortgage market in the early 2000s saw increasing growth in private-label securities — meaning they were not issued by one of the GSEs. These securities were backed by mortgages that did not necessarily have to adhere to the same standards as those purchased by the GSEs.

Freddie and Fannie, as profit-seeking corporations, were then under pressure to increase returns for their shareholders, and while they were restricted in the securitizations that they could issue, they were not prevented from adding these riskier private-label MBS to their own investment portfolios.

At the same time, a series of technological innovations lowered the costs to the GSEs, as well as many of the

lenders and secondary market participants, of assessing and pricing risk. Beginning back in 1992, Freddie had begun accessing computerized credit scores, but more extensive systems in subsequent years captured additional data on the borrowers and properties and fed that data into statistical models to produce underwriting recommendations. By early 2006, more than 90 percent of lenders were participating in an automated underwriting system, typically either Fannie's Desktop Underwriter or Freddie's Loan Prospector (now known as Loan Product Advisor).

Borys Grochulski of the Richmond Fed observes that these systems made a difference, as they allowed lenders to be creative in constructing mortgages for would-be homeowners who would otherwise be unable to qualify. "Many potential mortgage borrowers who didn't have the right credit quality and were out of the mortgage market now could be brought on by these financial-information processing innovations," he says.

Indeed, speaking in May 2007, before the full extent of the impending mortgage crisis — and Great Recession — was apparent, then-Fed Chair Ben Bernanke noted that the expansion of what was known as the subprime mortgage market was spurred mostly by these technological innovations. Subprime is just one of several categories of loan quality and risk; lenders used data to separate borrowers into risk categories, with riskier loans charged higher rates.

But Marc Gott, a former director of Fannie's Loan Servicing Department said in a 2008 *New York Times* interview, "We didn't really know what we were buying. This system was designed for plain vanilla loans, and we were trying to push chocolate sundaes through the gears."

Nonetheless, some investors still wanted to diversify their portfolios with MBS with higher yields. And the government's implicit backing of the GSEs gave market participants

the confidence to continue securitizing, buying, and selling mortgages until the bubble finally popped in 2008. (The incentive for such risk taking in response to the expectation of insurance coverage or a bailout is known as “moral hazard.”)

According to research by the Treasury Department, 8 million homes were foreclosed, 8.8 million workers lost their jobs, and \$7.4 trillion in stock market wealth and \$19.2 trillion in household wealth was wiped away during the Great Recession that followed the mortgage crisis. As it became clear that the GSEs had purchased loans they knew were risky, they were placed under government

conservatorship that is still in place, and they ultimately cost taxpayers \$190 billion. In addition, to inject liquidity into the struggling mortgage market, the Fed began purchasing the GSEs’ MBS in late 2008 and would ultimately purchase over \$1 trillion in those bonds up through late 2014.

The 2008 housing crisis and the Great Recession have made it harder for some aspiring homeowners to purchase a home, as no-money-down mortgages are no longer available for most borrowers, and banks are also less willing to lend to those with less-than-ideal credit. Also, traditional commercial banks, which also suffered tremendous losses, have stepped

back from their involvement in mortgage origination and servicing. Filling the gap has been increased competition among smaller mortgage companies, many of whom, according to Grochulski, sell their mortgages to the GSEs, who still package them and sell them off to the private markets.

While the market seems to be functioning well now under this structure, stresses have been a persistent presence throughout its history. And while these crises have been painful and disruptive, they have fueled innovations that have given a wide range of Americans the chance to enjoy the benefits — and burdens — of homeownership. **EF**

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BY JOHN MULLIN

Wiser Policy for Seniors

The American population is aging rapidly. The share of people who are 65 or older grew from 12 percent in 2000 to 17 percent in 2020. It's forecast to grow to 22 percent by 2040, according to the U.S. Census Bureau.

In view of this trend, economists are attempting to improve their understanding of the economic decisions facing older people — decisions that are likely to become increasingly important for the U.S. economy as the population distribution skews older.

Richmond Fed economist John Bailey Jones has conducted extensive research on the economics of older households. He was introduced to the subject around the time he was finishing graduate school at the University of Wisconsin-Madison. “It really wasn’t planned,” Jones recalls. “I was invited to work on a project with a classmate, and I liked the technical challenges of the problem. It was an interesting puzzle.”

Over time, his appreciation of the topic grew. “The behavior of older people is really important,” he says. “I don’t think it’s been adequately studied, and there’s a lot of new data that’s becoming available that allows us to answer questions we may not have been able to ask or answer in the past.”

Jones’ research in recent years has spanned three closely related areas: saving after retirement, medical costs in old age, and Social Security reform.

So-called “life-cycle” models of lifetime consumption typically predict that people will accumulate savings in their working years and spend much of those savings during retirement. Yet studies have shown that many couples continue to accumulate wealth after retirement. Three primary motives for this have been suggested: that retired couples save as a precaution against unanticipated medical expenses, that they save out of a desire to leave bequests to their heirs, or that they save out of a desire to remain in their own homes.

In a 2021 working paper, “Why Do Couples and Singles Save During Retirement,” Jones and his co-authors assessed the relative importance of the various motivations. The answer, it turns out, depends on a household’s wealth. “We find that, for couples and wealthier singles, the bequest motive dominates at the margin,” Jones says. “But if you look at less affluent singles, it appears that medical expenses are more of a driver.”

Even though enrollment in the Medicare program is nearly universal, the program has many coverage gaps.

Consequently, medical expenses remain a major concern among older households — one that can shape their spending and saving decisions.

In a 2018 journal article, “The Lifetime Medical Spending of Retirees,” Jones and his co-authors estimated the amount of medical spending remaining in the lives of households whose oldest member turned 70 years old in 1992. The researchers found that the figure was high and uncertain: On average, these households would incur \$122,000 in medical expenses in their remaining lives. But the numbers were much higher for some families — the 5 percent of households with the largest medical bills would incur expenses above \$300,000.

“There’s a lot of new data that’s becoming available that allows us to answer questions we may not have been able to ask or answer in the past.”

To Jones, one of the more striking findings of this research was that forward-looking lifetime medical expenses did not diminish quickly with age. “Let’s say that, when I am 70 years old, my future medical expenses are expected to total \$100,000,” Jones says. “If I live until age 80, my future medical expenses are not expected to be much lower than that. A lot of this is because a nontrivial chunk of medical spending comes in the last few years of life.”

Much of Jones’ research has been devoted to understanding the effects of the U.S. Social Security system. In a 2020 working paper, “Social Security Reform with Heterogeneous Mortality,” Jones and co-author Yue Li of the University at Albany examined, among other things, the implications of increasing the system’s normal retirement age — the age of eligibility for full benefits, currently 67 for retirees born in 1960 or after. While this reform would lower costs by countering the trend toward a longer-lived population, the researchers showed that it exacerbates inequality by disproportionately cutting the benefits of lower-income people, who tend to have shorter lifespans. Using a life-cycle model, they found that societal welfare is maximized when Social Security benefits are independent of lifetime earnings and when early-retirement penalties are reduced.

Jones expects that variants of the life-cycle model will remain essential to answering the many policy design questions surrounding population aging. In a recent literature review, “Savings After Retirement,” Jones and his co-authors argued that the life-cycle model has been one of the great successes in economics. He advocates for economists to continue improving the framework — for a better understanding of the behavior of older households and the policies that affect them. **EF**

Annamaria Lusardi

On financial literacy, seniors versus scammers, and learning from the mistakes of NFL players

Annamaria Lusardi “fell in love” with economics, she says, thanks to a macroeconomics course she took as an undergraduate at Bocconi University in her native Italy. But her career has been focused on a quite different topic — she’s a leading researcher in personal finance. How good are the skills and information that individuals bring to their financial decisions? And how can institutions provide them with the skills to make better decisions? These are the questions that have been preoccupying her for the past several decades, most recently as University Professor at George Washington University in Washington, D.C. She is also the academic director of the university’s Global Financial Literacy Excellence Center, a research center she founded in 2011.

Lusardi’s research has appeared in numerous academic journals, including the *American Economic Review* and the *Journal of Political Economy*. She is the editor or co-editor of several books on financial education and on retirement savings and is working on a textbook on personal finance for Oxford University Press.

David A. Price interviewed Lusardi by phone in January 2023.



EF: Your work has been focused on financial literacy and retirement savings. What drew you to these areas?

Lusardi: When I was working on my Ph.D. at Princeton, I was a student of Angus Deaton, so my work was very much related to studying savings and consumption behavior with microdata. As I worked more and tried to understand what shapes individuals’ decisions about savings, I could see that people who might be similar in terms of lifetime income and other characteristics would end up later on with vastly different amounts of wealth. This told me there was potentially something important missing in the models.

At the same time, my work looking at savings for retirement led me to consider that people needed to have quite a bit of knowledge to plan for retirement — that you needed to be skilled in making complex calculations, that you had to collect quite a bit of data, that you had to be aware of concepts like interest compounding, the effect of inflation, and so on. I wondered whether people have this knowledge. And I realized that I couldn’t answer these questions because there wasn’t data on how much people knew.

I was also influenced by a course I took at Princeton with Alan Blinder. He asked similar questions for macro: Do people know, for example, the interest rate in an economy? Do they know the level of inflation?

All this led me to designing measures of financial literacy. And those original measures that I worked on back in 2004 have now become the measures that people normally use to assess financial literacy.

Another reason why I did so is because we have witnessed a highly important change in the United States and around the world, which is that more and more, we have shifted the responsibility to save for retirement from the employer to workers. I am talking about the shift from defined benefit pensions to defined contribution pensions, such as individual

retirement accounts and 401(k) plans. In the past, it was the employer who had to manage the pension of the employees; the wealth was managed by a CFO or by other financial experts. Now we ask individuals to make these decisions about their wealth. So even more than when I was an assistant professor, there's the question of whether people have the skill to manage their money.

EF: You and Olivia Mitchell created three survey questions on financial literacy that are often called the “big three.” How did you arrive at them?

Lusardi: When Olivia Mitchell at the University of Pennsylvania and I tried to design those questions, we first asked what does financial literacy mean? What are we trying to measure when we measure financial literacy? What we decided to do is to look at knowledge of the basic but fundamental concepts for making financial decisions.

We were told we could have only a handful of questions to be added to a survey, and having only three turned out to be a big advantage as it is easy to add three questions to many surveys. We thought that what is very important is that people can understand and do simple calculations in the context of interest rates. In particular, we wanted to measure knowledge of interest compounding. That is because almost every decision has to do with shifting resources over time. We also asked about inflation and the workings of inflation. And finally, we asked about risk and risk diversification. (See box.)

These questions are intended to measure very basic knowledge. We're not asking people to price bonds. We are asking them, can you do a 2 percent calculation in the context of interest rates, do you know the effect of inflation, do you know how risk diversification works. These are three fundamental concepts in financial decision-making.

The questions have been now used

everywhere. Many countries have been adding these questions in their national surveys.

EF: How does financial literacy in the United States compare with that in other countries?

Lusardi: Together with a team at the World Bank, I eventually designed questions similar to the big three that were applied to a sample of more than 140 countries. I would say there are several interesting findings. One is that even though the U.S. is the country with the most advanced financial markets, it actually doesn't score very high in terms of financial literacy. And this has been true in other surveys, as well.

The second thing is that overall financial literacy is not high in other countries, either. Overall, the level of financial literacy globally is really low; only one-third of people around the world are financially literate.

And third, we have also found that the topic that people know the least — and this is true around the world, not just in the U.S. — is risk and risk management. Clearly, this is much more difficult, but it is also a knowledge that we need so much more now that the world has become more uncertain. One of the questions we ask is whether people know whether a single stock is safer than a stock mutual fund. In other words, we are asking people whether they know that putting all of your eggs in one basket is a risky proposition. This is the concept that people grasp the least.

EF: What are the main points about financial behavior that you wish more people knew?

Lusardi: First of all, it's important to understand finance applies to everybody. We all need today to take good care of our finances — because we have to take care of decisions that in the past were taken care of by others or were different. I'm thinking of

THE “BIG THREE” FINANCIAL LITERACY SURVEY QUESTIONS

1. Suppose you had \$100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?
 - More than \$102
 - Exactly \$102
 - Less than \$102
 - Do not know/Refuse to answer
2. Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account?
 - More than today
 - Exactly the same
 - Less than today
 - Do not know/Refuse to answer
3. Please tell me whether this statement is true or false. “Buying a single company's stock usually provides a safer return than a stock mutual fund.”
 - True
 - False
 - Do not know/Refuse to answer

NOTE: Correct answers are (1) “More than \$102,” (2) “Less than today,” and (3) False.

SOURCE: Annamaria Lusardi and Olivia S. Mitchell

pensions; I'm thinking of health care, of the cost of education. I'm thinking of even, for example, taking care of aging parents because of demographic changes.

As a result, we need to democratize financial literacy. What my research shows is that the small group of people who are financially literate are disproportionately white males from college-educated families. But each of us needs to know the basics to make good financial decisions.

We can all do it well. We can all, if we use this knowledge, arrive at

financial decisions that will make us financially resilient. Resilience in engineering means you bend, but you don't break when facing a shock.

EF: You've talked about how financial literacy can make a difference. Does it in fact make a difference? Does having the knowledge seem to translate into better decisions?

Lusardi: I can say a resounding yes now. This has been, in a sense, a battle because a lot of studies were trying to argue that financial literacy didn't matter. So what we did recently — and it took us a good many years to do this project — is a meta-analysis of financial education programs. A meta-analysis means trying to analyze the existing literature, in this case on financial literacy and financial education. We had to do so because the literature has grown so much and so wide. Because the literature was so extensive, we then decided to concentrate on the most rigorous evaluations. So we looked at only the randomized control trials. In other words, we looked at the financial education programs that were evaluated like you do in the sciences, meaning you have a control group and one or more treatment groups. So you expose a group to financial education; you don't expose the other, similar group; and then you compare what happened to the group you treated.

What we found, looking at the evidence in as many as 33 countries, is that financial education works and works well — meaning it does translate into higher knowledge and also better behavior in savings and managing credit and in other areas, including insurance and money transfers. And we also found that it is cost effective. This is due to the fact that many educational programs do not cost very much.

There has been some skepticism on financial education. It's something I've always been puzzled by. We have universities, we value education highly, but then we are skeptical that it works in this context. I always felt that giving

Annamaria Lusardi

■ PRESENT POSITIONS

University Professor of Economics and Accountancy, The George Washington University

Founder and Academic Director, Global Financial Literacy Excellence Center

■ SELECTED ADDITIONAL AFFILIATIONS

Director, Italian Committee for Financial Education; Research Associate, National Bureau of Economic Research; Research Fellow, Centre for Economic Policy Research

■ EDUCATION

Ph.D. (1992), Princeton University; B.A. (1986), Bocconi University

people education as we do, for example at the universities, in every field — engineering, music, whatever education it is — is really powerful. Why should financial literacy be different?

By the way, business schools like mine teach corporate finance, so we teach prospective CFOs to manage the money of the firm, and nobody's asking whether that education is effective. No firms would hire people who do not know about finance to manage their money. We can apply that as well to individuals: You need to have some basic knowledge to manage money — it is that simple.

EF: The news media occasionally reports on professional athletes who make extraordinary amounts of money and then end up bankrupt in middle age. Why does that happen? And is there anything we can learn from their experiences?

Lusardi: Yes, definitely. I co-authored a paper about this, specifically on NFL players, in the *American Economic Review*.

Professional football players are incredibly rich. According to our research, in the short career of the football player — no matter their position in the game — they basically earn

what a person with a college degree would earn in a lifetime. Yet there were statistics reported in newspapers that 78 percent of football players go bankrupt.

These statistics didn't really make sense; the proportion was too high. So what we did in our work was follow a cohort of professional football players. Matching their salaries with other data, we looked at what we consider the most dramatic negative outcomes — not just losing wealth but declaring bankruptcy. Our reason was that we could get information on that.

What we found is that in a 12-year span after they stopped playing, 15 percent of the players declared bankruptcy. Some players were losing all of their wealth right away as they stopped playing. So it didn't take a long time for them to deplete their money to the point of declaring bankruptcy — even though they likely started with the wealth to not have to work again in their lifetimes.

This outcome yet again speaks of the importance of financial literacy among the young. If someone who doesn't know anything about finance receives millions of dollars, it is not necessarily going to go well. And these players were disproportionately from low-income families. That's another predictor of having low financial literacy and also of not having an informed network to rely on.

Also, anecdotal evidence shows that even players who were using financial planners or a financial advisor were going bankrupt; in fact, it was that that led to the bankruptcy. They mostly were relying on financial advisors who were taking advantage of them.

Around the time I was working on the paper, my business school designed a program called STAR EMBA, which was a program for people of this type, meaning professional athletes or celebrities who often had a short career. The class was mostly composed of football players. We wanted to provide professional help in building their next career. My role was to design a course

on financial literacy and personal finance. It was fantastic to be involved in this project because these people are extremely talented, as you can imagine. But they don't know at all about finance! It was important to fill that gap.

One of the things they told us a lot is how their advisors, rather than helping them, often were proposing highly risky schemes or were charging very high fees. As I always say: A financial advisor is not a substitute for financial literacy. It's a complement, as you need to be financially savvy to choose a good one, and that's certainly true in the case of these wealthy young people.

EF: Let's turn from young people to seniors. You've studied the effects of debt on the well-being of people near retirement. What did you find out about it? Presumably lots of debt near retirement is bad.

Lusardi: The simple life-cycle model is arguing that when you get close to retirement, you should have the highest amount of wealth. But what we found is that many people who are close to retirement didn't seem to have much wealth and, if anything, they were carrying high-cost debt, such as credit card debt or other unsecured debt. In one of our recent works, we found that a sizable proportion of people close to retirement were even being contacted by debt collectors. And people were carrying — certainly compared to previous generations — more debt into retirement.

You could argue, well, that's probably what we should expect because of the lower interest rate on debt. But it was surprising to us to see just how much debt was brought close to retirement and into retirement; so much so that in retirement, people have to not just spend down wealth, but also service their debt, something different than in the past.

EF: Anecdotally, one hears a lot about scammers preying on elderly retirees. Does this seem to be a significant issue? If so, what should the elderly and their family members be doing?

Lusardi: Unfortunately, the elderly are an ideal target for scams. Overall, our data show an inverted U-shaped profile of financial knowledge over time: Financial knowledge is quite low later in life. We don't know whether it is just an age effect — that when you are

"Unfortunately, the elderly are an ideal target for scams. Overall, our data shows an inverted U-shaped profile of financial knowledge over time: Financial knowledge is quite low later in life. We don't know whether it is just an age effect — that when you are older, your cognitive ability changes — or a generational effect, that the older people now didn't have to make as many financial decisions so they didn't build a lot of financial literacy."

older, your cognitive ability changes — or a generational effect, that the older people now didn't have to make as many financial decisions so they didn't build a lot of financial literacy.

Unfortunately, older people often are not aware of their limited knowledge. So when you ask people how much they think they know, this is where we see one of the biggest mismatches between what people think they know and what they actually know. And that makes someone vulnerable.

And third, it's mostly the older people who have wealth because they are in the stage of the life cycle where they should have the highest level of it. For all these reasons, the elderly are vulnerable. Their knowledge is low. They don't know they have this low knowledge. And they normally carry more wealth than people in other stages of the life cycle.

I do think that this is an important problem, and it might become with time even more relevant given the aging of the population. What we should do, as in many other financial decisions, is try to do prevention and also plan for that stage of life where we anticipate that we might not be able or we might be more vulnerable. We should try to set up a structure and a framework so that either the financial planner or the other people we're relying on can detect potentially when there are problems. Also, we want to decide earlier how to

assign some of these financial decisions, because sometimes family members are not necessarily the best for the task. So it takes some planning to try to minimize or avoid being in difficult situations later on.

EF: What should policymakers be taking away from your work?

Lusardi: There are clear implications for policy from my research. One is that we need to promote financial literacy. The levels are too low for people to make good decisions. And if many people make potentially expensive mistakes, then society as a whole may be asked to pay for it. We saw this in the mortgage defaults in the financial crisis, for example.

And we can think of many others, from inadequate saving for retirement to not being able to pay student loans to not insuring for small and big shocks. I think it's important that we educate people so those types of behaviors can be as limited as possible.

But there are also implications for inequality. In many contexts in finance, we can have transfers literally from the poor to the rich. For example, the people who refinance their mortgages are disproportionately the high-income people, who can get even better rates because many others, poorer households, do not refinance when interest rates come down. High-income people

may have the knowledge and liquidity to be able to take advantage of the tax benefit of investing in 401(k) plans and IRAs. And the more vulnerable groups in society can be even more vulnerable when it comes to financial decision-making. So it's important that we try to give access to financial education to everyone. And in fact, 80 countries or more are now implementing a national strategy for financial literacy.

One of my recommendations is that we add financial literacy to the national statistics: Report on the population's financial literacy along with GDP, saving, productivity, and all the rest. It's a good indicator of how well the citizens in the country are doing.

EF: What are you working on now?

Lusardi: I'm working on three things. First, I've just started as the editor of a new academic journal on financial

literacy that I proposed a few years ago and that started this year. It's called the *Journal of Financial Literacy and Wellbeing*. It's published by the Cambridge University Press. Financial literacy has now become a field of study, one with its own *Journal of Economic Literature* code — it's G53 — and we also now have an academic journal dedicated to this field. I hope that this is a way to foster a lot of research in this area, because we certainly need to know more about how we can improve the level of financial literacy around the world and help people make savvy financial decisions.

The second thing is I continue to collect data on financial literacy. Since 2016, we have been doing a project with the TIAA Institute, measuring financial literacy with as many as 28 questions. So we went from the big three to 28 questions. We call that measure the Personal Finance Index

or P-Fin Index. So we have a detailed, rich set of information on the type of knowledge and information that people would need to make their financial decisions. We collect this data each year, and each year we also try to focus either on one demographic group or one topic. For example, the most recent data was focused on longevity literacy: Do people know how long they are going to live, and do they plan accordingly?

And third, I'm continuing to do my policy work, in particular in my native Italy, where I chair the Financial Education Committee in charge of designing and implementing a national strategy for financial literacy. I'm very proud of that work. My mother lives in Italy; I have two sisters and a lot of nieces in Italy. Trying to do the best I can to improve financial literacy in Italy is my small contribution to my native country. **EF**

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BY SIERRA LATHAM

Who's in Need?

Measuring low- and moderate-income status and poverty status in the Fifth District

Both governments and community-based organizations administer means-tested programs that serve populations in financial need. Some programs, such as the Supplemental Nutrition Assistance Program (SNAP) or Housing Choice Vouchers, provide immediate access to necessary resources. Others, such as Pell Grants, provide resources so beneficiaries can access opportunities that will improve their long-term earning potential.

How do policymakers decide who qualifies for means-tested programs? Depending on the goals and available resources of the program, policymakers may decide to limit eligibility to low-income or both low- and moderate-income (LMI) individuals and families. For place-based initiatives, in which resources support a project that serves a community as opposed to an individual, policymakers may limit eligibility to areas where aggregate income statistics indicate that the population living in the area is predominately low income or LMI.

Policymakers and researchers studying LMI populations need a benchmark to assess individuals' or households' incomes. The two most commonly used are the poverty threshold and area median income (AMI). This article discusses differences between them and how they are used to describe income dynamics in the context of the Fifth District.

WHO IS CONSIDERED LMI?

Characterizing income relative to the poverty threshold or AMI are two different ways to tell a similar story. There are practical differences between the two measures. Most notably, the poverty threshold is nationally

determined and used to identify extremely low-income populations, whereas AMI is locally or regionally determined and is more often used to understand or characterize conditions facing LMI populations. Technically, the poverty threshold serves as the basis for *absolute* measures of poverty, meaning a measure that compares people's income against a foundational needs standard that remains consistent over time. AMI is used to create *relative* measures of income, which consider how well-off people are compared to a standard of living that is allowed to shift over time and in relation to their peers.

The poverty threshold was created in 1963 and was based on three times the cost of a minimum food budget. This is because, at the time, most families' food budgets were their largest recurring expense, accounting for about one-third of their total budget. Because the cost of a family's food budget depends on the number of family members, different poverty thresholds were defined based on family size. Every year, the Census Bureau calculates current poverty thresholds by adjusting the 1963 poverty threshold for inflation. The Census Bureau's 2022 poverty thresholds range from \$14,036 for a household of one person over age 65 to \$64,815 for a family that consists of nine or more related adults.

People living in families earning less than the poverty threshold are considered to be in poverty, meaning they are extremely low income. Researchers and policymakers also consider depth of poverty measures, which instead compare family incomes to a fraction or multiple of the poverty threshold. For example, some researchers

consider families earning up to 200 percent of the poverty threshold to be low income. In this way, depth of poverty measures more fully describe the economic well-being of families.

AMI measures the median income at the metropolitan statistical area (MSA) level for metropolitan areas and state-level nonmetropolitan median income for nonmetropolitan areas. Because income tends to be higher in metropolitan areas, AMI tends to be greater in those areas than in nonmetropolitan areas. As a case in point, none of the nonmetropolitan state median incomes in the Fifth District exceed \$80,000, whereas many MSA median incomes do. (See top map.)

Most organizations use a definition of LMI that includes families earning up to 80 percent of AMI, but definitions of who is considered extremely low income, very low income, or low income vary. One commonly used scale is:

- Extremely low income: at or below 30 percent of AMI
- Low income: 31-50 percent of AMI
- Moderate income: 51-80 percent of AMI
- Middle income: 81-120 percent of AMI

WHAT PLACES ARE CONSIDERED LMI?

Income characteristics can also be described for geographic areas, such as counties or census tracts.

A geographic area can be characterized by the area's poverty rate, which indicates the share of people living below the poverty threshold. A geographic area is considered high poverty if its poverty rate is over 20 percent.

Alternatively, a geography may be considered LMI depending on

how aggregate income characteristics compare to AMI. In most cases, a geographic area is considered LMI if its median income is less than 80 percent of AMI. For example, in 2020, the city of Baltimore's median income was \$52,164, which is about 50 percent of the Baltimore-Columbia-Towson MSA AMI of \$104,637; therefore, Baltimore is considered low income. Nonmetropolitan counties are considered LMI if their median income is less than 80 percent of the nonmetropolitan state AMI. For example, in 2020, McDowell County in southern West Virginia had a median income of \$26,072, which is 44 percent of West Virginia's nonmetropolitan state median income of \$59,300, so it is considered low income.

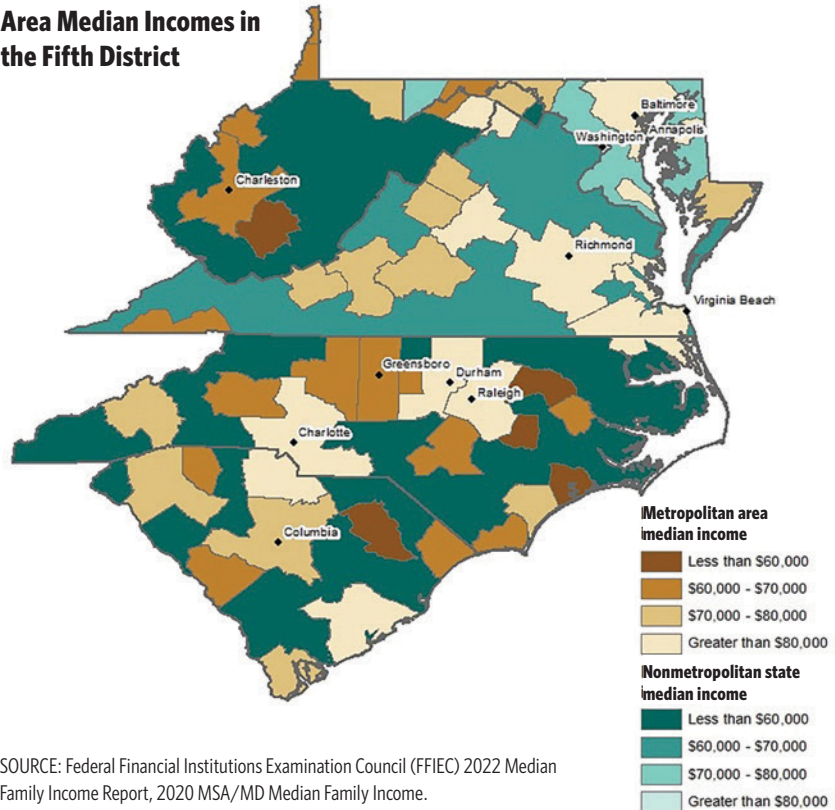
In the Fifth District, nonmetropolitan counties are more likely to be both high poverty and LMI than urban counties. Significant shares of both metropolitan and nonmetropolitan counties are LMI but not high poverty. (See bottom map.)

MEASURING THE ELIGIBILITY OF INDIVIDUALS

To determine whether families or individuals are eligible for public assistance, state and federal agencies frequently compare their incomes to the poverty threshold. For example, families are eligible for SNAP (which provides food subsidies) or Head Start (which provides free early care and education) if their incomes are at or below 130 percent of the poverty threshold.

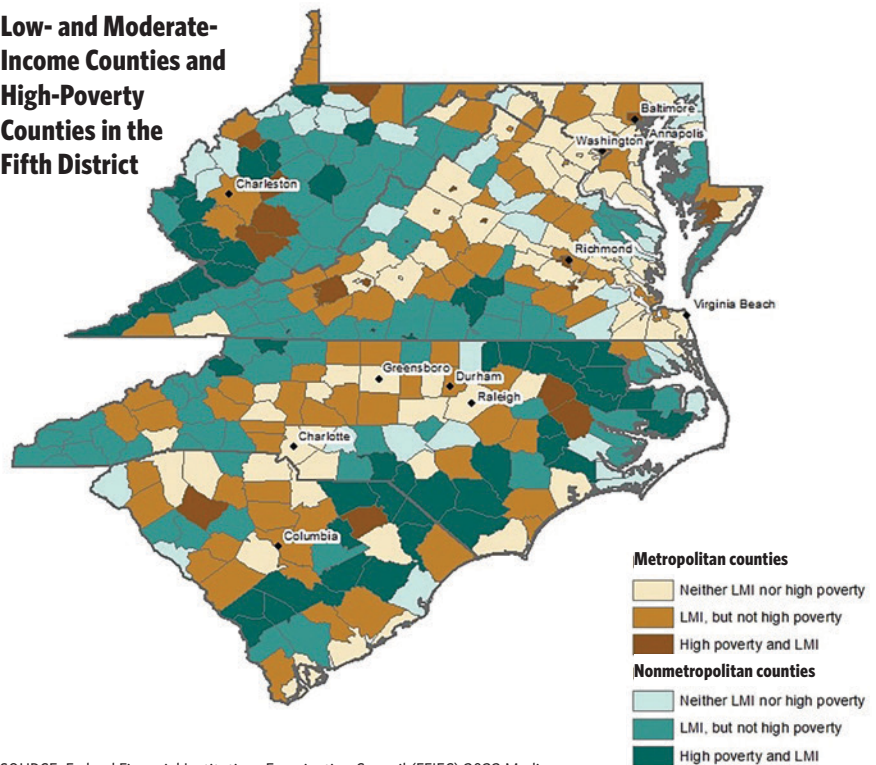
Eligibility criteria can be complicated. For example, some state-administered programs (including SNAP) can override federal eligibility criteria. To clarify how location-specific criteria influence the amount of benefit a family is eligible to receive, the Atlanta Fed has developed the Policy Rules Database. This resource takes into account the number of adults and children in the family, age of adults, and disability status. Users then select which public assistance programs they want to consider, and the

Area Median Incomes in the Fifth District



SOURCE: Federal Financial Institutions Examination Council (FFIEC) 2022 Median Family Income Report, 2020 MSA/MD Median Family Income.

Low- and Moderate-Income Counties and High-Poverty Counties in the Fifth District



SOURCE: Federal Financial Institutions Examination Council (FFIEC) 2022 Median Family Income Report, 2020 MSA/MD Median Family Income.

POVERTY MEASURES IN RESEARCH

For research purposes, the question of whether to use income relative to AMI or income relative to the poverty threshold to evaluate a population depends on the question being asked. If the researcher is conducting a longitudinal analysis, the poverty threshold provides a consistent benchmark against which to compare income over time. While AMI does vary over time, it also implicitly accounts for variation in cost of living across different geographic areas; this is because cost of living is highly correlated with AMI. For this reason, researchers looking to explore differences in purchasing power in different geographic areas over a short period may prefer to use income relative to AMI.

While the poverty threshold and income relative to AMI are the two most commonly used measures for determining income eligibility for means-tested programs, researchers may consider additional thresholds against which to characterize the income of populations. For example, the Census Bureau publishes the Supplemental Poverty Measure as an alternative to the poverty rate.

The Supplemental Poverty Measure refines the poverty rate by accounting for additional financial resources and recurring expenses and allowing for geographic variation in housing costs. In addition to earned income, which is used to generate poverty rates, the Supplemental Poverty Measure also includes cash and near-cash public assistance benefits among a family's financial resources. Beyond the subsistence food budget used in the poverty

rate, the Supplemental Poverty Measure also considers clothing, shelter, utilities, and telecommunications as among necessary expenses. The Supplemental Poverty Measure also accounts for differences in housing cost based on geography and whether a family owns or rents their home. Whereas the poverty rate differentiates families from unrelated individuals, the Supplemental Poverty Measure instead differentiates between resource units (to include families, unmarried partners and their relatives, coresident unrelated children, and foster children) and unrelated individuals.

In the Fifth District, the share of people in poverty according to the 2019 Supplemental Poverty Measure tended to be greater than the share of people in poverty according to the poverty rate in all Fifth District states (except West Virginia) and the District of Columbia.

As another alternative, United Way has developed a measure called ALICE, which stands for "Asset Limited, Income Constrained, Employed." ALICE is an alternative threshold based on a survival budget that includes housing, child care, food, transportation, health care, telecommunications, taxes, and contingency savings. Like the Supplemental Poverty Measure, it is intended to improve upon the poverty threshold approach by serving as a more accurate measure of how many households are having difficulty making ends meet. ALICE measures are county-specific and are currently available nationwide.

— Sierra Latham

database displays how public assistance benefits will vary as their employment income changes.

Federal programs that use AMI to assess individual and family eligibility tend to provide benefits related to expenses for which prices fluctuate across localities. For example, programs administered by the U.S. Department of Housing and Urban Development (HUD), such as Housing Choice Vouchers, use AMI to determine eligibility. This allows the value of housing benefits to adjust to the cost of housing across communities.

To simplify the process of determining whether a family is income-eligible for public assistance programs, some states use broad-based categorical eligibility, which expands eligibility from one program to another. For example, qualifying for the Temporary

Assistance for Needy Families program would confer categorical eligibility on a family, making them eligible to receive SNAP public assistance as well.

Some government programs are also designed with flexible eligibility thresholds. For example, North Carolina has a child care subsidy program that is funded with both state and federal resources. Families are income-eligible if they earn up to 200 percent of the poverty threshold, but the program is also available to families that meet certain situational criteria (for example, if a parent is in school or a job training program). Mecklenburg County, N.C., augments these resources to expand eligibility to households earning up to 300 percent of the poverty threshold, and to reduce the work/education-hour

requirements for families earning less than 200 percent of the poverty threshold.

MEASURING THE ELIGIBILITY OF PLACES

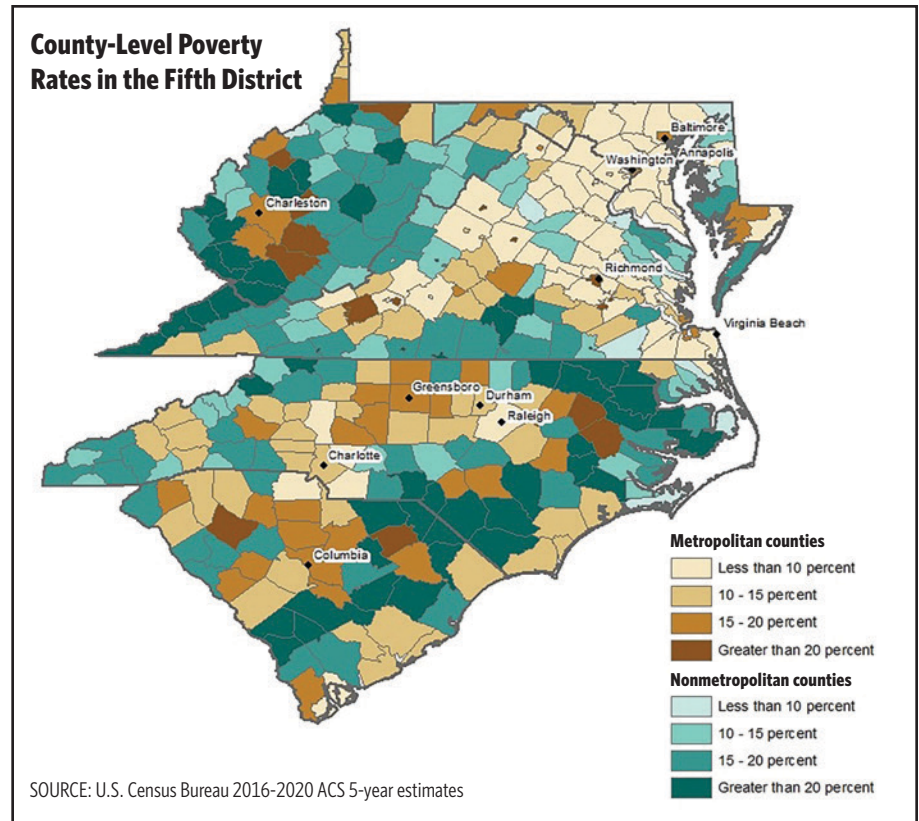
Some grants or loans are awarded to organizations that will use those resources to improve the economic conditions of a specific place. In order to be awarded or get credit for place-based program funding, organizations are required to describe aggregate income characteristics of the community they intend to serve.

The Community Reinvestment Act (CRA) was established to make sure banks were equitably providing access to credit throughout their service area. In particular, the CRA requires banking regulators such as the Fed to encourage

banks to meet the credit needs of the communities they serve, including LMI communities. The CRA defines LMI communities based on aggregate income characteristics of a place. Banks meet CRA requirements by providing or purchasing loans and for providing grants and services in LMI communities. A community may consist of a subcounty geography, such as a block group or tract. According to the CRA, a geography is low income if it has a median family income of at most 50 percent of AMI, and moderate income if it has a median family income of 50 percent to 80 percent of AMI.

Other programs, such as the New Markets Tax Credit (NMTC), allow the applicant – generally an investor – to decide whether to use poverty rates or AMI to determine whether the target community is considered low income. NMTC provides federal income tax credits to investors that contribute to qualified investments in low-income communities. With a few exceptions, a community is considered low income if it is located in a census tract with a poverty rate of at least 20 percent, or where the median family income does not exceed 80 percent of AMI.

Some place-based programs take a different approach to assessing eligibility: They specify that LMI populations are intended to be served using resources provided, regardless of aggregate income measures. For example, Community Development Block Grant (CDBG) funds are allocated to states, cities, and counties on a formula basis and are used to expand housing and economic opportunities for LMI people. Instead of relying on comparing the community median income to AMI, applicants need to consider how many people in the community they plan to assist fall in this income range. These data are not available in standard Census Bureau American Community Survey (ACS) tables, which most organizations rely on for timely data. HUD, the agency that administers CDBG, works with the Census Bureau to provide data on the number of LMI people at the



county level every five years.

Using aggregate income measures to determine place-based eligibility may present challenges for places with small populations, such as rural areas. Because five-year ACS data are based on a sample of about 5 percent of households, places with small populations may observe greater variance in median income estimates from year to year than places with larger populations. This could influence the community's eligibility from one year to the next, making it difficult for community leaders to anticipate what resources they can rely on over time.

Some place-based funding tends to be awarded on the basis of a combination of factors, including the local unemployment rate, income, and poverty characteristics. For example, the Community Development Financial Institutions Fund's Bank Enterprise Award Program is awarded to depository institutions that have increased their investments in census tracts with

poverty rates above 30 percent and unemployment rates that are at least 50 percent greater than the national unemployment rate. As another example, the Appalachian Regional Commission determines match requirements based on an economic distress index, which takes into account a county's unemployment rate, per capita income level, and poverty rate.

LMI MEASURES IN THE FIFTH DISTRICT

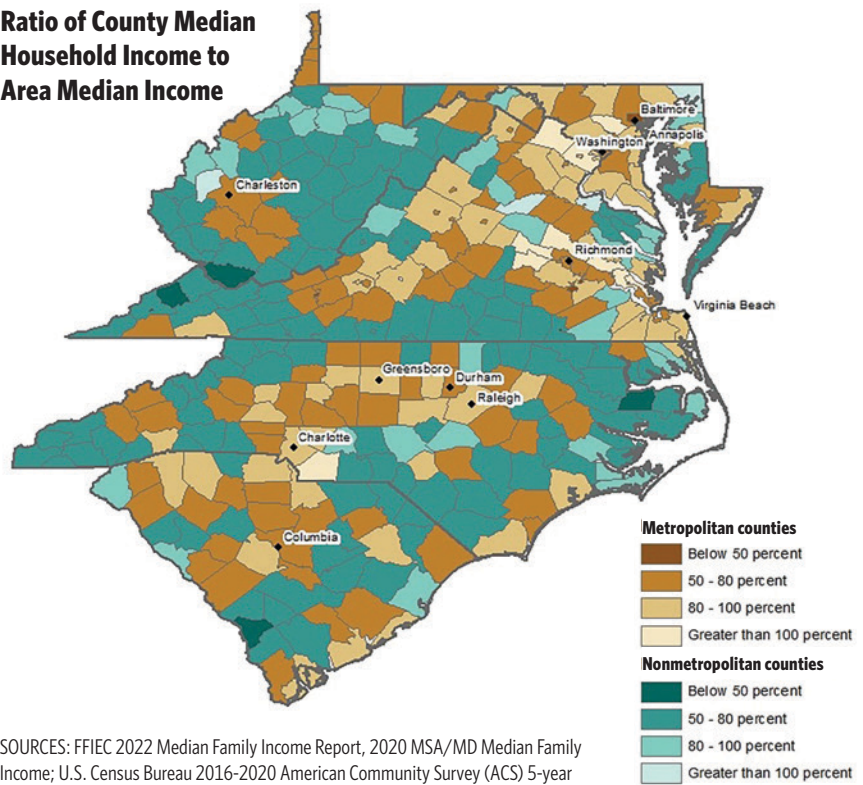
Looking at Fifth District communities' poverty rates and median income relative to AMI presents two different ways to understand income characteristics of the local population. At the county level, there are clusters of high poverty counties in eastern North Carolina and South Carolina, in western Virginia, and in southern West Virginia. High poverty metropolitan counties tend to be scattered throughout the Fifth District. (See map.)

Most nonmetropolitan counties in the Fifth District are LMI, and more than half of metropolitan counties are LMI. Few counties in the Fifth District have median incomes greater than 100 percent of AMI. (See map.) Note that, while this analysis displays county-level statistics, the same analysis can be conducted at smaller geographies.

Looking at these two maps together tells a more complete story about specific places. Some places are unambiguous. For example, McDowell County in southern West Virginia is both high poverty and low income. Other stories are more complicated. For example, Richmond is high poverty, but moderate income. This means that, while about 21 percent of Richmond residents live below the poverty threshold, there are enough people with relatively high incomes to somewhat offset those with extremely low incomes.

Neighborhood-level poverty and income characteristics in Richmond reveal how this might be the case. Neighborhoods in the eastern part of the city tend to be both high poverty and low income, whereas neighborhoods in the western part of the city tend to have incomes greater than 100 percent of AMI and lower poverty rates. Most neighborhoods with high poverty rates are also low income; the one exception is the Woodland Heights neighborhood, which is in the central part of the city and is both high poverty and has a median greater than 100 percent of AMI.

Ratio of County Median Household Income to Area Median Income



SOURCES: FFIEC 2022 Median Family Income Report, 2020 MSA/MD Median Family Income; U.S. Census Bureau 2016-2020 American Community Survey (ACS) 5-year estimates; and author's calculations.

CONCLUSION

AMI and the poverty threshold are two benchmarks against which to measure the economic well-being of a family or individual. They can also be used in aggregate to assess the extent of economic need in a community. When studying community

income dynamics, the poverty rate and median income-to-AMI ratio can be used in conjunction to tell a more complete story, and hint at income distribution. In addition, the Supplemental Poverty Measure provides another lens through which to assess the economic well-being of populations. **EF**

BY AUBREY GEORGE

Hidden Effects of Global Trade

Paul Ho, Pierre-Daniel Sarte, and Felipe Schwartzman. “Multilateral Comovement in a New Keynesian World: A Little Trade Goes a Long Way.” Federal Reserve Bank of Richmond Working Paper No. 22-10, November 2022.

Economists have long studied the parallel movement of inflation and output growth. But although this correlation occurs in the data as strongly across countries as within, standard models in macroeconomics tend to focus only on inflation-output relationships within countries, perhaps because most large countries purchase roughly 80 percent of goods domestically. Nonetheless, economic disturbances are not confined within the country where they originate; they propagate throughout that country’s trading network as both its immediate trading partners and trading partners of trading partners react. In a recent working paper, Richmond Fed economists Paul Ho, Pierre-Daniel Sarte, and Felipe Schwartzman demonstrated how trade networks can explain a large proportion of cross-country comovement in inflation and GDP growth even though foreign trade constitutes a small part of many economies. Inflation movements in a country are related not only to that country’s own production, but also to movements in output growth, consumption, and exchange rates in every other country.

To quantify the effects of country-specific shocks across that country’s trading network, Ho, Sarte, and Schwartzman added international trade in goods and financial assets to the standard model used by macroeconomists to analyze business cycles. Their model includes the typical three agents within each country: firms that produce outputs and maximize profits, households that maximize utility from consumption

given a budget constraint, and a monetary authority that determines interest rates according to some rule.

In their model, adding international linkages results in important changes in all three groups’ decisions compared to the traditional model. First, the marginal costs faced by firms in their model depend not only on domestic input costs, but also on foreign input costs and exchange rates. Further, these input costs, such as wages, depend on

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foreign demand conditions. Because input costs for firms affect the domestic price level, foreign shocks affect domestic inflation. Second, households may invest both in domestic bond markets as well as in foreign exchange markets, which means they have access to internationally and domestically traded assets to finance their consumption. Finally, monetary authorities across countries may coordinate their policy responses to global shocks.

Using this model and data on GDP growth, trade, inflation, interest rates, and exchange rates from the United States, the European Union, Canada, Japan, and China from 2004 to 2019, the researchers determined the proportion of cross-country inflation and output growth comovement that results from trade versus from global factors affecting countries simultaneously. When countries are allowed to trade but are not exposed to any global shocks, correlation in GDP growth across countries falls by roughly 10 percent. Therefore, almost 90 percent of the comovement is attributable to trade even though trade constitutes a small portion of domestic consumption.

Further, trade accounts for a little over half of the cross-country comovement in inflation and output. This result derives from the network effects of trade; a country’s shocks propagate to its immediate trading partners and instigate third-country effects as other economies respond to a changing environment. Of course, the importance of trade versus global shocks in explaining comovement varies according to the relationship between any two countries. Countries engaged in substantial trade with one another are more affected by the trade channel.

Ho, Sarte, and Schwartzman suggested that their research can provide insight into current economic questions. For example, how did the inflationary shock in Europe caused by war in Ukraine affect inflation in the United States? Assuming three-quarters of the observed 4.4 percent increase in inflation from the fourth quarter of 2021 to the first quarter of 2022 in Europe was due to the war, they estimated the EU inflationary shock accounted for around 50 percent of U.S. price increases during the same period. Another such question they considered was how monetary tightening in the United States would influence output abroad; they found that a 0.25 percentage-point increase in the federal funds rate causes output to fall in other countries by almost 70 percent of the U.S. domestic response.

An implication of Ho, Sarte, and Schwartzman’s research is that the indirect effects of trade mean disruptions in countries with whom the United States trades very little can have significant effects on the U.S. economy. As the authors noted in a recent *Economic Brief* about their paper, their findings emphasize “a need for policymakers to be attentive not only to local conditions, but also developments internationally.” **EF**

BY KARTIK ATHREYA

Unique Challenges in the Housing Market

The Fed’s monetary tightening over the past year has had an immediate effect on the housing market. The average interest rate on a 30-year fixed-rate mortgage more than doubled from about 3 percent at the end of 2021 to around 7 percent by the fall of 2022. Higher mortgage rates — so long as inflation is not expected to stay high — raise the real cost of borrowing to buy a new home, so it is no surprise that new home sales declined throughout 2022. But if the Fed didn’t act to bring inflation down, we could expect lenders to charge high rates simply to break even in real terms. The average 30-year fixed-rate mortgage at the start of 1980, before the Fed began tackling the Great Inflation, was nearly 13 percent.

The Fed pays close attention to the housing market. Housing often bears the brunt of monetary policy adjustments as an interest-sensitive sector. And since housing, and the construction industry more generally, are important parts of real investment in the economy, making sharp changes in this sector matters for both employment and production. It also makes up a large part of what we buy, so rapid moves in price of housing services — even if not a common occurrence — will matter for the inflation we all experience, which means it matters for the Fed. Housing is connected to our employment mandate for another reason too. Crises in the housing market are often associated with the worst kinds of recessions. Higher average house prices require many new homebuyers to take on more debt, and higher debt levels can lead to greater overall economic pain during a downturn. Finally, a lack of affordable housing can inhibit the ability of workers to freely move about and take advantage of new opportunities, which may stunt productivity growth.

Mortgage rates are just one component of housing affordability. As an economist, I’m struck by how different the housing market is from many other markets. In particular, the affordable housing shortage seems extremely durable, while there are few, if any, other goods or services consistently hard to find at reasonable prices. For example, there are plenty of high- and low-cost choices in the markets for watches or cars. To be sure, unlike goods intended purely for consumption, housing is also an investment. For many people, their home is the largest asset they own. And the value of a home is tied to its location through the quality of surrounding amenities, such as schools, in a way that is difficult to unbundle.

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Residents in a neighborhood will be wary of changes that might hurt the value of their homes. Incumbents can — and do — vote for zoning and permitting rules that reduce the ability to build smaller, more affordable homes. Such political decision-making allows them to avoid paying according to the intensity of their preferences to not live among modest housing. They just need to vote on zoning — and that is free! So, it isn’t surprising we see different outcomes than in the case of other goods and services.

We also can’t ignore the lingering effects of historical discrimination in the mortgage market. At a conference hosted by the Richmond Fed late last year, my colleague Horacio Sapriza presented findings that minorities in neighborhoods that were deprived of access to credit through redlining practices that were made illegal decades ago continue to pay higher interest rates today.

What can be done to improve housing affordability? One thing is clear: Any long-term solution must involve expanding the supply of affordable homes. Subsidies without an increase in supply are only likely to increase prices over time. At a minimum, we can rethink policies that subsidize larger, more expensive homes. For example, economists have documented that the mortgage interest deduction incentivized the purchase (and construction) of more expensive homes, and not more homes of varying sizes. Local governments may benefit in the long run by funding more mixed housing developments to improve community diversity. More diverse neighborhoods may spur the creation of

a wider array of surrounding businesses and amenities than homogenous subdivisions.

Researchers at the Richmond Fed and elsewhere are continuing to learn about housing challenges and potential solutions. As I’m writing these words, I’m getting ready to participate in a Richmond Fed District Dialogues event on this topic where I’ll hear from experts and members of our community. Sessions like this one are a great opportunity for our research team and members of the public to learn more together about the economic issues facing the communities we serve. I hope you’ll check out this event on our website. **EF**

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