FIRST QUARTER 2019

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FEDERAL RESERVE BANK OF RICHMOND

Opportunity Zones in Distressed Communities

More Money, More Problems?

Initial Coin Offerings

Rural Hospital Closures

Interview with Enrico Moretti

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FEATURES

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What's Lost when Rural Hospitals Close

In addition to monetary policy, the Richmond Fed works with a number of partners to identify and try to address economic challenges and opportunities in underserved communities. That's why our research staff and I have spent the past year trying to understand more deeply the differences in outcomes we see between urban and rural areas. Residents of smaller towns, for example, are significantly less likely to be employed than people who live in larger cities. What's behind those differences, and what can policymakers do?

We're looking at four key themes that could move the needle in rural communities. The first is education, or more broadly, preparing people to enter the workforce, as I've discussed in this column before. The second is connecting people to good jobs, for example, via collaborations between community colleges and local employers. We're also studying obstacles to labor force participation, such as disability and addiction. Finally, we're researching how to address the consequences of the social and geographic remoteness of many rural communities. By this, I don't mean that there aren't strong social networks in small towns — the opposite is often true. But there may be informational and institutional gaps that don't exist in larger cities. If you live in a place where fewer adults have gone to college, for example, you might not view college as a viable option for yourself.

Research is only part of the equation. We're also working to share what we've learned and to highlight initiatives that might be replicable in other areas. This fall, for example, we're hosting a national conference that will bring together community leaders, employers, researchers, policymakers, foundations, and others to identify practical strategies that can have the largest benefit for rural areas and their residents.

Given that context, the closure of many rural hospitals, which Emily Wavering Corcoran and Sonya Ravindranath Waddell discuss in this issue's District Digest, is a trend we pay attention to. Here in our district, a dozen rural hospitals have closed since 2010, and 21 are at serious financial risk of closing. Nationwide, more than 100 hospitals in rural areas have shut their doors.

As Emily and Sonya explain, a variety of forces have contributed to these closures. Hospital stays have become shorter on average, in part because of medical advances that allow more procedures to be performed on an outpatient basis; this is a benefit for patients, but it means less revenue for hospitals. The declining population in many rural areas has also been a challenge for hospitals, not only from a revenue perspective, but also because the quality of care tends to improve when procedures are performed more frequently. Rural hospitals find it more difficult to attract talent. In addition, many hospitals have struggled with the costs of caring for patients who do not have health insurance, particularly in states that did not expand Medicaid with the Affordable Care Act.

The most obvious implication of a hospital closure in a small town is reduced access to health care, which may be of particular concern in communities that are struggling with high rates of addiction and disability. In smaller communities, as Emily and Sonya note, a hospital closing can also mean the loss of many of its core well-paying jobs.

What is less appreciated is that hospitals also play a vital role as "anchor institutions" in rural communities. These institutions provide civic leaders and highly educated workers who can raise the aspirations of those around them. They invest in their communities and educate residents about healthy lifestyles. They supply amenities that attract talent. They signal a community's vibrancy to potential business owners and residents. So when a rural hospital closes, much more than jobs are lost.

This doesn't necessarily mean a hospital can stay open if it is no longer financially viable. But it does mean policymakers who are interested in seeing rural communities thrive must acknowledge that the success of their hospitals is a compelling public policy objective that includes, but goes far beyond, health care. **EF**

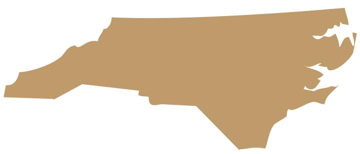
TOM BARKIN
PRESIDENT
FEDERAL RESERVE BANK OF RICHMOND

Upfront

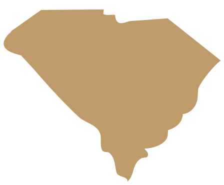
Regional News at a Glance

BY LISA KENNEY

MARYLAND — A 131-year-old paper mill in the western Maryland town of Luke closed in June, eliminating 675 jobs. The mill, owned by Miamisburg, Ohio-based Verso Corp., was one of the largest employers in Allegany County, which has an unemployment rate higher than the state average. According to the *Baltimore Sun*, the mill was controversial among environmentalists because it was one of the largest industrial sources of air pollution in the state but generated energy by burning "black liquor," a paper-making byproduct, which is considered a renewable fuel under a state green energy program.



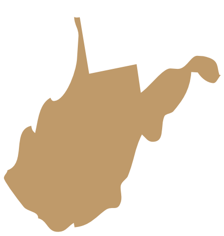
NORTH CAROLINA —Did a craft brewery just open near you in Charlotte? Good news: Your home may be worth more. A recent report from researchers at the University of Toledo and the University of North Carolina at Charlotte studied homes sold in Charlotte between 2002 and 2017 and found that when a brewery opened within a half-mile, condo prices in city-center neighborhoods jumped an average of nearly 3 percent while single-family home prices increased nearly 10 percent. It's been found that breweries spur revitalization when they move into abandoned industrial spaces by drawing other businesses to the area.



SOUTH CAROLINA —The Carolina Panthers will soon strengthen their ties to South Carolina. On May 20, South Carolina lawmakers passed a $115 million tax incentive package for the NFL team to move its headquarters and practice facilities from Charlotte, N.C., to Rock Hill, S.C. The Panthers plan to purchase about 200 acres in Rock Hill for a $200 million sports complex that should be open by 2022. The state's Commerce Department estimated that the new complex could have an economic impact of up to $3.8 billion over 15 years. The Panthers will continue to play games at their existing stadium in Charlotte.

VIRGINIA — Pharmaceutical maker Merck & Co. announced in May that it will invest $1 billion over the next three years to expand its vaccine manufacturing plant in Rockingham County. The expansion will add 120,000 square feet and an estimated 100 new jobs. To support the project, James Madison University and Blue Ridge Community College will work together to develop biotechnology engineering and computer science programs aimed at creating a workforce trained for jobs at Merck and other life-science companies in the area.

WASHINGTON, D.C. —A record number of tourists visited D.C. in 2018, according to a May report from the nonprofit Destination DC. More than 21 million domestic tourists visited D.C. and spent almost $8 billion. This was an increase of 1.1 million domestic visitors and a 4.3 percent increase in spending from 2017. Tourism in the nation's capital supports almost 80,000 jobs in everything from music venues to museums to sports stadiums. Figures on international tourists won't be available until later in 2019.



WEST VIRGINIA — In early May, state business and education leaders announced they were joining together to form the "West Virginia Ready Graduate" initiative. After studying hiring, promotion, and college admissions data, the initiative pinpointed the characteristics, skills, and knowledge that West Virginia students need to succeed in the workforce. Building on the initiative, a new internship program will place rising high school juniors and seniors in four-week paid summer internships at various state businesses. The internship will result in college credits.

Dealing with Monetary Policy Spillovers

Fed policy has effects outside U.S. borders, but what can monetary policymakers here and abroad do about it?

BY TIM SABLIK

During the financial crisis of 2007-2008, the Fed took extraordinary measures to cushion the fall of the U.S. economy. This included cutting the federal funds rate to near zero and purchasing assets on a massive scale to further increase the supply of money in the economy — a policy known as quantitative easing, or QE.

The intent of these policies was to alleviate domestic economic problems such as mounting unemployment. As the financial crisis turned into the Great Recession, the Fed embarked on a second and third round of QE. While these policies may have helped soften the blow of the recession on the United States, other countries complained that the Fed's actions were having disastrous effects on their economies.

In 2012, Brazilian President Dilma Rousseff referred to the expansionary policy in the United States and other advanced economies as a "monetary tsunami" that was overwhelming emerging economies. In the immediate wake of the crisis, many investors sought safety in developed markets despite low or even negative interest rates. When the initial panic subsided but interest rates remained low, however, investors began to seek higher returns in emerging markets.

Those investments reversed course in mid-2013 after then-Chair Ben Bernanke indicated that the Fed might consider slowing QE soon if economic conditions in the United States improved. His comments triggered a sharp response in emerging markets such as Brazil and India as investors who had sought higher yields in those markets suddenly pulled out. This and other market reactions to Bernanke's comments came to be known as the "taper tantrum."

In a 2014 speech, Raghuram Rajan, then-governor of the Reserve Bank of India, called on the Fed and central banks in other advanced economies to be more mindful of the effects their policy decisions could have on other countries.

"Even if a central bank has a purely domestic mandate, the country's international responsibilities do not allow it to arbitrarily impose costs on the rest of the world," he said.

But just how much impact does Fed policy have on the rest of the world? And what, if anything, can it or other central banks do about such monetary policy spillovers?

The Dollar's Global Reach

The U.S. economy accounts for nearly a quarter of worldwide GDP, making it the largest economy in the world. It's unsurprising, then, that economic shocks in the United States often have global repercussions. One recent study found that the last four global recessions all overlapped with major U.S. recessions. To be sure, spillovers go both ways. America's interconnections with the rest of the world mean that policy changes in other countries affect it as well. But most economists agree that the United States is a driving force behind the global business cycle, making spillovers from Fed policy changes particularly powerful.

One reason for this is the role of the dollar in the global economy. Nearly a third of non-U.S. trade is priced in dollars, and according to the Bank for International Settlements (BIS), non-U.S. banks have about $15 trillion in U.S. dollar liabilities. The dollar's outsized involvement in global trade and finances means that the effects of U.S. monetary policy are more than just domestic.

"There's a lot of activity in dollars outside the United States," says Stephen Cecchetti of Brandeis University, who previously served as director of research at the New York Fed and economic adviser at the BIS. "So when the Fed changes the safe rate of return on dollar-denominated assets by changing its monetary policy, everything adjusts."

Along with Tommaso Mancini-Griffoli, Machiko Narita, and Ratna Sahay of the International Monetary Fund, Cecchetti found that changes in U.S. monetary policy had an even larger effect on the median non-U.S. financial firm in advanced economies than domestic monetary policy changes in those countries. Another recent paper by economists at the Federal Reserve Board

Raghuram Rajan, then-governor of the Reserve Bank of India, speaks about the costs of monetary policy spillovers at the Brookings Institution in Washington, D.C., on April 10, 2014.

PHOTOGRAPHY: THE BROOKINGS INSTITUTION

of Governors also found that monetary tightening by the Fed was associated with banking crises in countries whose economies were linked to the United States via trade or dollar-denominated bank liabilities.

Still, despite the vocal complaints from leaders of other countries about Fed policy during the Great Recession, it's not clear that unconventional monetary policy such as QE generated more spillovers than the Fed's traditional monetary policy. A 2018 paper by researchers at the Fed Board of Governors found no evidence that QE had larger international spillover effects than conventional monetary policy.

In fact, QE may have had positive effects on other economies, at least initially. Anusha Chari, Karlye Dilts Stedman, and Christian Lundblad of the University of North Carolina at Chapel Hill used high-frequency data to examine the effects of U.S. monetary policy shocks on emerging market countries between March 1994 and June 2016. They didn't find strong evidence of the "monetary tsunami" that Brazilian President Rousseff spoke of during the QE period, but they did find that the value of equity in emerging markets increased significantly during this period.

"In a classic asset pricing framework, rising equity valuations implies that the cost of capital is falling," says Chari. "That can have a positive effect on investment and growth."

But any positive effects turned sharply negative during the taper tantrum in 2013. Indeed, this was the concern of central bankers in emerging markets during the QE period: that positive spillovers from the Fed would increase the leverage in their financial systems, setting financial firms up for a fall when Fed policy reversed. And by all accounts, that fall was hard. Chari and her co-authors found that the spillovers from the taper tantrum were nearly three times the size of those from the QE period for debt measures. Further, the effects on equity were nearly triple the effects on debt during the taper period.

A Call for Coordination

In his 2014 speech, Rajan called on the Fed and central banks in other advanced economies to commit to greater collaboration to reduce the disruption from spillovers.

"The current non-system in international monetary policy is, in my view, a source of substantial risk," he said.

There is some evidence that synchronizing monetary policy responses to global economic shocks can be beneficial. Laura Liu of Indiana University, Christian Matthes of the Richmond Fed, and Katerina Petrova of the University of St. Andrews examined monetary policy spillovers among the United States, the United Kingdom, and the euro area across time in a 2018 paper. They found evidence that monetary policy in the United Kingdom and Europe happened to be more in sync with policy changes in the United States during the early 1980s. While not the result of explicit coordination, the movement of policy in the United Kingdom and Europe in response to unexpected changes in U.S. policy during this period was associated with more positive spillover effects.

Fortuitous alignment of monetary policy across countries is one thing, but explicit central bank policy coordination has proven to be a more complicated issue. During the period between the two world wars, New York Fed Governor (the title for Reserve Bank presidents at the time) Benjamin Strong worked with the heads of the Bank of England, the German Reichsbank, and the Banque de France to support the international gold standard. The BIS was established during this period in part to facilitate central bank cooperation, according to economic historians Michael Bordo of Rutgers University and Catherine Schenk of the University of Oxford.

The post-World War II international monetary system, developed in Bretton Woods, N.H., also involved plenty of central bank cooperation. Throughout the 1960s and into the early 1970s, the Fed and other central banks intervened in currency markets in order to maintain the fixed exchange rates that underpinned the Bretton Woods system. (See "The Fed's Foray Into Forex," *Econ Focus*, Second Quarter 2017.) But in the cases of both the interwar gold standard and Bretton Woods, policy coordination alone was ultimately not enough to keep the systems in place.

Throughout the 1970s and 1980s, the Fed periodically coordinated with central banks in other advanced economies to stabilize the value of the dollar. In the "Plaza Accord" of 1985, for example, the United States pledged to pursue expansionary monetary policy while Japan agreed to pursue contractionary policy. But as the 1980s came to an end, policymakers and economists grew more skeptical of the value of this sort of explicit coordination.

"Policymakers became increasingly convinced that the best way of maintaining economic stability was to keep 'one's own house in order,'" wrote Claudio Borio of the BIS and Gianni Toniolo of Duke University and the University of Rome Tor Vergata in a 2006 history of central bank cooperation. While central bankers today acknowledge that their policy decisions can have effects on other countries, they have little appetite for subordinating domestic monetary policy to international concerns.

In 2013, finance officials and central bankers from Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States issued a statement in which they agreed to "cooperate as appropriate" but reaffirmed that "fiscal and monetary policies ...will remain oriented toward meeting ... domestic objectives using domestic instruments."

"The central bank's mandate in any country is a domestic one," says Cecchetti. "That's not to say that central bank officials don't care about what happens elsewhere in the world, but they focus on domestic conditions because that's their job."

Indeed, coordinating policies to minimize international spillovers could even make it more difficult for the Fed or other central banks to meet their domestic objectives. In a recent paper, Fed Vice Chair Richard Clarida argued that formal policy coordination could threaten the credibility for containing inflation that the Fed fought so hard to build in the 1980s and 1990s by making domestic policy concerns secondary to international considerations. To the extent that this causes domestic inflation expectations to become unanchored, this could ultimately lead to worse spillover effects as the Fed grappled with reasserting control over inflation.

"The all-in cost to a regime of policy cooperation could swamp the theoretical benefits," Clarida wrote.

Resilience and Transparency

Short of policy coordination, then, what can countries do to defend against monetary policy spillovers?

After Bretton Woods, many economists thought flexible exchange rates would provide some defense, allowing countries to pursue their own monetary policies in the face of international capital flows. A country that is open to international capital and has a fixed exchange rate pegged to the dollar, for example, cannot deviate its monetary policy from the Fed's. The discrepancy in interest rates between the two countries would trigger capital inflows or outflows, putting pressure on the currency to adjust. The only way for a country to be open to international capital and retain independent monetary policy is to have flexible exchange rates. (This is known as the Mundell-Fleming trilemma.)

But Hélène Rey of the London Business School found that countries with floating exchange rates face similar spillovers from Fed policy as countries with fixed exchange rates. That means central banks in countries with flexible exchange rates may still be obliged to respond to spillovers from other central banks, constraining their independence.

Additionally, monetary policy responses to another country's spillovers may be counterproductive. In their 2019 paper, Cecchetti, Mancini-Griffoli, Narita, and Sahay note that if easing by the Fed increases leverage in the financial systems of other countries by increasing capital flows, central banks in those countries would likely respond by tightening their monetary policy. This would have the effect of raising interest rates in that country further, potentially attracting even more foreign capital and magnifying the spillover effects.

"All the natural domestic monetary policy responses to spillovers are probably going to make things worse," says Cecchetti.

An alternative option is macroprudential policies — requirements such as capital and liquidity rules imposed on financial firms to prevent system-wide problems. Such policies may offer a better defense against spillovers by making countries' financial systems more resilient. A 2019 article by Elöd Takáts of the BIS and Judit Temesvary of the Fed Board of Governors suggested that there are advantages to keeping one's financial house in order. They examined the fallout from the 2013 taper tantrum and found that countries that had implemented macroprudential regulations prior to the event were significantly less affected.

Financial regulation is also an area where cooperation among central banks is less controversial. Through groups like the Basel Committee on Banking Supervision, policymakers routinely discuss best regulatory practices and formulate minimum standards for financial firms. These global standards can help prevent weaknesses in one country's financial system that can lead to negative spillovers for the rest of the world. This type of regulatory collaboration does not keep central bankers from independently pursuing the monetary policy best suited to their domestic economic conditions. Unsurprisingly, then, central banks in advanced economies have largely favored this type of cooperation.

Another way that the Fed might be able to help moderate the effects of its spillovers is by clearly communicating its policy moves in advance.

"During the taper tantrum, the shock that had the greatest impact was the most unexpected one," says Chari. "When Chair Bernanke first mentioned tapering during congressional testimony in May 2013, the market really reacted."

When the Fed actually started to raise interest rates and taper QE, it proceeded very gradually, using forward guidance in its policy statements to signal when changes would occur. "With a gradual rollout, the cumulative spillover effect might be the same, but you won't get these big shocks," says Chari.

The Fed seems to favor these latter two approaches to mitigating policy spillovers — cooperation in financial regulation and open communication about monetary policy moves — over the sort of explicit policy coordination proposed by Rajan. At a May 2018 conference in Zurich on the international monetary system, Fed Chair Jerome Powell expressed the Fed's commitment to communicate policy decisions "as clearly and transparently as possible to…avoid market disruptions" and pledged to "help build resilience in the financial system and support global efforts to do the same." While such measures may not prevent monetary policy spillovers that arise from America's economic dominance, they could at least lessen their impact. **EF**

Readings

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JARGON ALERT

Money Supply

BY MIKE FINNEGAN

When the economist Milton Friedman said that "inflation is always and everywhere a monetary phenomenon," he was highlighting the relationship between inflation and the supply of money in the economy. To see this relationship in action, we can look at famous cases of hyperinflation, such as the Weimar Republic of pre-World War II Germany. To pay reparations from World War I, the German government began rapidly printing money, thereby increasing the amount of money in the economy. The large increase in the supply of money caused the value of a single bill to become less than it was the day before. Storeowners raised their prices in response and so consumers needed more currency to buy the same quantity of goods; this process continued until eventually people would bring wheelbarrows of cash to buy simple household items. Even today, there are occasional cases of hyperinflation — such as in Venezuela, where the supply of money has recently increased by double digits in percentage terms on a weekly basis.

But what, exactly, is the money supply? Economists have used four main measures, known as M0, M1, M2, and M3. The four measures are nested: M3 includes M1 and M2; M2 includes M0 and M1.

The main feature distinguishing the four measures is the liquidity of their components (how easily one can exchange the asset for cash). The smallest and most liquid measure, M0, is strictly currency in circulation and money being kept by banks in reserves; hence, M0 is often referred to as the "monetary base." M1 is defined as all of M0 plus the remaining demand deposits not in reserves as well as traveler's checks; it is often referred to as "narrow money." M2 is everything included in M1 plus savings accounts, time deposits (under $100,000), and retail money market funds. M3 is everything in M2 plus larger time deposits and institutional money market funds. (Because the cost of estimating M3 was thought to outweigh its value, the Fed stopped reporting it in 2006.)

Additionally, as pointed out by the monetarist economist Anna Schwartz, there is a relationship between the components of these measures of money supply and how they are primarily used as a medium of exchange or a store of value. The components of the most liquid measures of the money supply, M0 and M1, all act as a medium of exchange in the economy, while the components of M2 are used primarily as a store of value; M3, in turn, can be thought of as a close substitute for money. Thus, the general idea is that there is a positive relationship between the medium of exchange property and liquidity.

The role of the money supply in the way that many economists think about inflation has evolved in the past decade as a result of changes in how the Fed conducts monetary policy. Before 2008, an increase in the monetary base was generally agreed to stimulate the economy in the short run and increase the price level in the long run. Today, monetary policy remains central in the determination of inflation, but the role of the monetary base is much reduced.

What changed is that the Fed received authority from Congress to pay interest on reserves (IOR) to banks for the reserves they hold at the Fed. The Fed responded to the 2007-2009 recession in part by engaging in massive purchases of Treasuries and mortgage-backed securities, adding greatly to the monetary base. By adjusting the interest rate on reserves appropriately, inducing banks to maintain high levels of reserves at the Fed, the Fed avoided the situation in which this infusion into the monetary base would lead to inflationary increases in bank deposits and lending and, therefore, in the money supply.

In short, in the post-2008 world, the Fed controls inflation by controlling the interest rate on excess reserves. Thus, an increase in the monetary base no longer necessarily leads to an increase in the money supply or, therefore, to an increase in the price level. Put differently, the familiar textbook relationship between central bank money creation and inflation has become less useful for understanding inflation.

M1 and IOR might not be the best cocktail party conversation starters, but knowing about the money supply and its evolving role is important for monetary policy. **EF**

ILLUSTRATION: TIMOTHY COOK

Raising Innovators

BY SARA HO

Innovation is a major driver of economic growth. Thus, it's no wonder that many economists are researching how to increase the supply of innovation.

In a recent article in the *Quarterly Journal of Economics*, a group of economists characterized the factors that shape who becomes an inventor in the United States. Their findings were twofold. First, children's chances of becoming inventors vary sharply with their characteristics at birth: race, gender, and parents' income. Second, exposure to innovation during childhood affects not only who becomes an inventor, but what type of innovation he or she pursues.

In their analysis, the researchers defined inventors as people who have filed for patents, been granted patents, or both. They linked patent data to federal income tax returns and to school test records. Using this data, they were able to track individuals' characteristics at birth, their math test scores (a proxy for ability), whether they eventually became inventors, and if so, what they invented. The information was anonymized.

"Who Becomes an Inventor in America? The Importance of Exposure to Innovation." Alex Bell, Raj Chetty, Xavier Jaravel, Neviana Petkova, and John Van Reenen. *Quarterly Journal of Economics*, May 2019, vol. 134, no. 2, pp. 647–713.

Several characteristics appeared highly predictive of children's propensity to become inventors: being white or Asian, being male, and having high-earning parents. To account for the possibility that families of different socioeconomic backgrounds could afford better educational resources and opportunities for their children, the researchers separated the effects by breaking up their sample of children by race, gender, and parental income. Even among children with the same high math scores, those with high parental incomes were still more likely to become inventors than those with lower parental incomes; Asians and whites were still more likely to become inventors than Hispanics and blacks; and men were still more likely to become inventors than women.

In addition, the authors showed that exposure to innovation during childhood had causal effects on who became an inventor and what type of innovation they pursued. In their sample, children whose fathers were inventors were nine times more likely to become inventors themselves. (See "Following in the Family Footsteps," *Econ Focus*, Fourth Quarter 2017.) The authors found similar results even when accounting for the fact that inventors generally had higher incomes than noninventors.

The researchers addressed the question of nature vs. nurture — that is, whether these children might have inherited their propensity to invent. To assess this, the researchers looked at the types of innovations the children chose to pursue. Inventions are classified into very narrow technology classes; for example, there are separate classes for synthetic versus natural resins. They found that having a father who is an inventor in a given technology class increased a child's probability of inventing in that same class by at least a factor of five. Similarly, children were more likely to invent in the technological class related to the *industry* in which their fathers worked, even if the father himself did not have a patent.

The researchers looked at geographical effects on rates of innovation. Moving a child from an area of relatively low innovation, such as New Orleans, to a place of high innovation, such as Austin, increased his or her probability of becoming an inventor by 37 percent. Furthermore, children were influenced by the technological class they grew up around. Children who grew up in Silicon Valley were especially likely to patent in computers, while children who grew up in Minneapolis, which has many medical device manufacturers, were especially likely to patent in medical devices. The pattern holds true even if the child became an inventor in a different geographical area than where they grew up.

Children growing up in an area of high innovation may receive direct training, access to networks, or the motivation of having role models around. Regarding the latter, the researchers studied the effects of growing up in areas with higher shares of female inventors. They found that women are significantly more likely to innovate if there were more women innovating in the area where they grew up; they also found similar significant causal effects when they broke the samples down by technological class.

How much do these factors affect the goal of increasing innovation? The researchers considered a scenario in which women, minorities, and children from low-income families invent at the same rate as white men from high-income families; they estimated that there would be 4.04 times as many inventors in America as there are today. In addition, the researchers looked for — and failed to find — evidence that inventors from underrepresented groups had inventions with more citations or higher monetary return. In their view, this means that not only are there fewer inventors from these groups overall, there are fewer highly consequential inventors, whom the authors call "lost Einsteins." Thus, policies that give children from underrepresented groups more exposure to invention could significantly increase innovation in the future. **EF**

Policy Update

No Poaching

BY LUNA SHEN

In March 2019, four fast-food chains — Dunkin Donuts, Arby's, Five Guys, and Little Caesars — agreed to stop requiring "no-poach agreements" of their franchise owners. The agreements allegedly restricted a franchisee's ability to recruit or hire employees from within the same chain, curbing the workers' job mobility. The settlement followed a yearlong investigation by 14 state attorneys general.

This settlement is another blow to no-poach agreements following an announcement by the Justice Department's Antitrust Division in October 2016 that it would treat naked no-poach agreements as criminal offenses. (Justice defined a "naked" no-poach agreement as one "not reasonably necessary to any separate, legitimate business collaboration between the employers.") The Justice Department views such agreements as in violation of the Sherman Act because they restrain competition in the labor market. They also hurt employees by limiting the information available to them, their bargaining power, and their job opportunities. At the same time as the Justice Department's announcement, Justice and the Federal Trade Commission (FTC) jointly released guidance on antitrust policy for human resources professionals.

In September 2017, Alan Krueger and Orley Ashenfelter of Princeton University published a paper revealing that among 156 of the largest franchise chains in the United States, 58 percent had no-poach agreements; among 40 of the largest fast-food chains, 80 percent had no-poach agreements. Spurred by this revelation and the Justice Department's new attitude, state attorneys and private plaintiffs launched investigations and filed class-action lawsuits against no-poach agreements. Washington state Attorney General Bob Ferguson reached settlements with more than 50 companies to end the agreements and sued Jersey Mike's Subs when they did not comply. The lawsuits initially focused on fast-food franchises but have since expanded to other franchises, including tax preparation services and hotels. For example, while Ferguson's first three waves of settlements targeted fast-food chains, he announced a fourth wave in October 2018 that included gyms and a car repair service.

There have also been no-poach agreements to restrict skilled employees. In September 2010, the Justice Department filed a civil antitrust complaint against Adobe Systems, Apple, Google, Intel, Intuit, and Pixar alleging they had made agreements among themselves to place their employees on "no call" lists so they would not recruit employees from one another. In the settlement, the companies agreed to stop these agreements for at least five years. Later, Apple, Google, Intel, and Adobe's employees won $415 million in a class-action lawsuit against them for their no-poaching practices. Noncompete clauses are illegal in California, so tech companies allegedly resorted to such agreements to try to keep their talent.

More recently, Duke University paid $54.5 million in a class-action suit over an alleged agreement with the University of North Carolina not to hire each other's faculty. The Justice Department participated in support of the plaintiffs.

The matter of the franchise no-poach agreements in particular is slightly more complicated because there are subtleties to what could be illegal versus legal agreements. For example, if two firms have some sort of joint venture and poaching would get in the way of that, a no-poach agreement might be lawful. Naked no-poach agreements would be treated as per se illegal — that is, inherently illegal, with factors such as intent not taken into account — while cases where a no-poach agreement could actually help competition would be reviewed under the "rule of reason," in which harms are weighed against benefits.

In several recent fast-food franchise cases, the Justice Department weighed in by filing a memorandum with the court stating its position that in the context of franchises, no-poach agreements should be judged under the rule of reason. According to an article by Nicole Castle and Matt Evola of the law firm McDermott Will & Emery, the Justice Department seemed to reason that no-poach agreements between parent companies and franchisees might help competition because they help promote brands and maintain brand quality, thus improving competition between brands even if they reduce competition within brands.

On the other hand, FTC Chairman Joseph Simons does not see the competitive benefits of such agreements. In a December 2018 interview with GCR USA, he stated, "The FTC doesn't see what the benefits of a non-compete agreement are when there is no highly skilled labour involved.... There doesn't seem to be any efficiency benefit, so outlawing that would seem not to have a cost to it; actually it might have a benefit." He did not, however, think it likely that such agreements violate antitrust laws, because the franchises do not have enough market power to limit competition; an employee could always quit and start working for another franchise.

The cost of a violation could be high. In a criminal Sherman Act case, a company can face criminal penalties of up to $100 million, while individuals can face penalties of up to $1 million and up to 10 years in prison — and that's before any civil actions. **EF**

Concentrating on Market Concentration

BY TIM SABLIK

Highlighted Research
"Diverging Trends in National and Local Concentration." Esteban Rossi-Hansberg, Pierre-Daniel G. Sarte, and Nicholas Trachter. Federal Reserve Bank of Richmond Working Paper No. 18-15R, September 2018 (revised February 2019).

The market concentration of large U.S. firms is increasingly a topic of public debate. Politicians have called for using antitrust laws to break up large tech firms such as Google, Facebook, and Amazon. The economics profession has contributed to this debate through a number of recent papers that show that market concentration in the United States has gone up across industries in recent decades.

Policymakers and economists worry about concentration because it could be a sign of weakening competition. Firms that control a large share of their market have fewer large competitors to contend with. As a result, they may have more power to raise prices and reduce wages and production, all of which would have a negative impact on the economy. In 2017, Jan de Loecker of Katholieke Universiteit Leuven and Jan Eeckhout of Universitat Pompeu Fabra Barcelona published an influential paper showing that average markups — what firms charge for goods and services above their marginal costs — were going up across the U.S. economy and that this increase was being driven by the largest firms within industries. It was another sign that market concentration and market power were on the rise.

"De Loecker and Eeckhout and other papers were arguing that market power was going up," says Nicholas Trachter, a senior economist at the Richmond Fed. "But on the other hand, many prices didn't seem to be getting higher, and firms were claiming that it was very hard for them to raise their prices because of competition. So I began trying to understand how to connect these two stories."

Along with his colleague at the Richmond Fed, Pierre-Daniel Sarte, and Esteban Rossi-Hansberg of Princeton University, Trachter began thinking about how large national firms expand into local markets. In many sectors of the economy, such as retail and services, firms compete locally rather than nationally. For example, a coffee shop in Richmond doesn't compete with a coffee shop in Seattle for customers. Likewise, restaurants in Manhattan don't compete with restaurants in San Francisco.

Using the National Establishment Time Series, they were able to study the concentration of industries at the national and local levels. They found that for many sectors of the U.S. economy, concentration was rising at the national level but was actually falling locally.

"At first we thought we might have made a mistake," says Sarte. But through a series of tests, they confirmed that the results were accurate. "Once we saw that, we thought, how can we reconcile these two trends of rising national concentration and falling local concentration?"

In a paper published in the Richmond Fed's working paper series as well as in the National Bureau of Economic Research's working paper series, they explained how both trends were being driven by large national companies. When a national chain such as Walmart or Starbucks opens a new store, the chain increases its share of the national market, which, in turn, increases national concentration. But they typically don't open new stores where one already exists. Instead, they expand into new locations, where other firms are already operating. Rather than drive those firms out of the local market, Rossi-Hansberg, Sarte, and Trachter found that large firms decreased local concentration when they opened a new store.

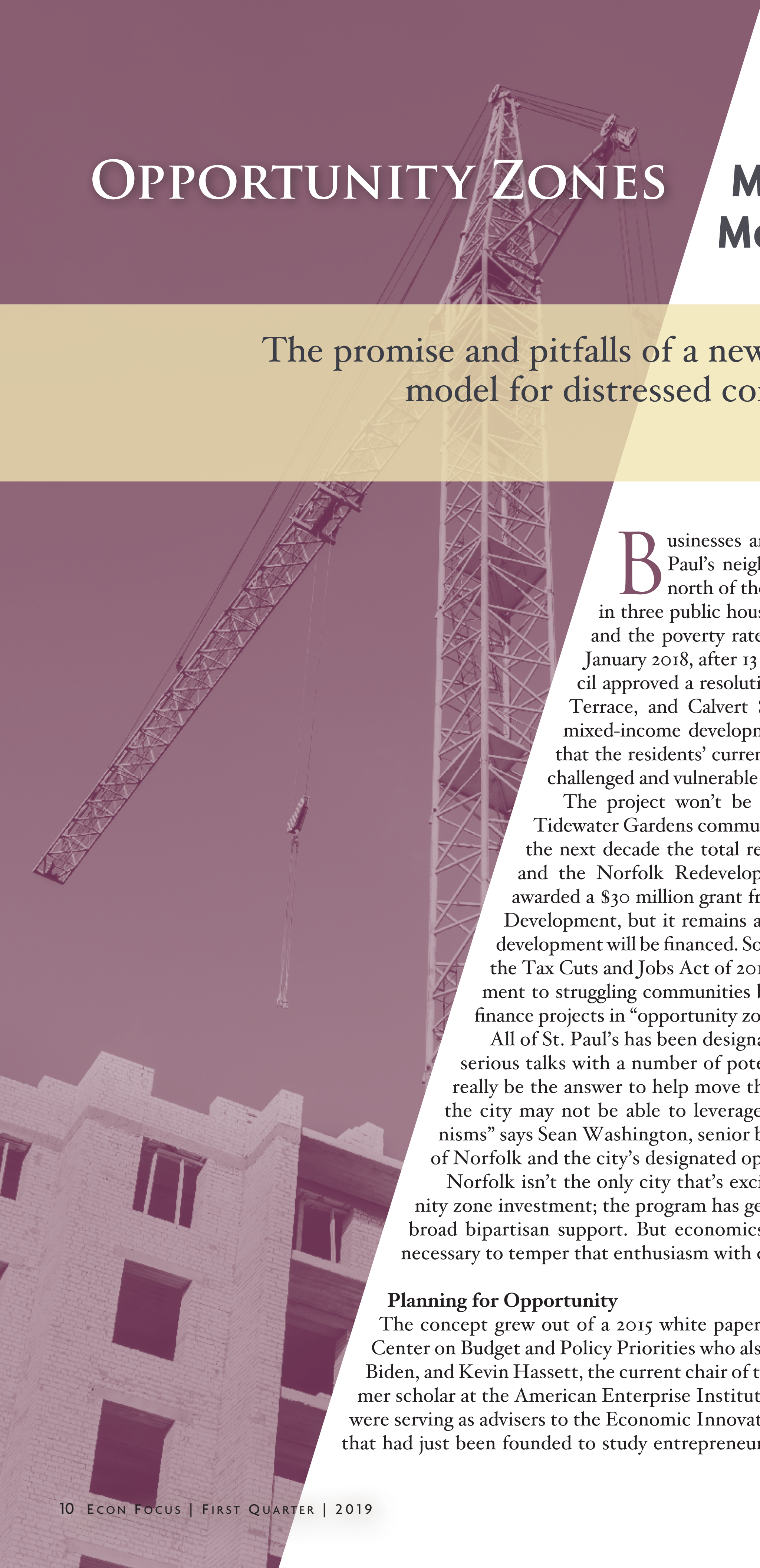
"So large firms grow at the national level by expanding geographically, but at the local level there is more competition because there are now more firms in the local market," explains Trachter.

To the extent that consumer markets are local, then, these findings suggest that competition may be increasing rather than decreasing. To be sure, not all industries are local. The manufacturing sector, for example, benefits from economies of scale and easy transportation of its products that make it more of a national sector than a local one. But industries that do exhibit diverging trends of national and local concentration employ roughly three-quarters of U.S. workers and account for two-thirds of all sales, making local competition important for a large segment of the economy.

"What we found is that the world is a lot more subtle than one might have been led to believe just based on the aggregate concentration data," says Sarte. "Even before we did this study, some people had a feeling that we shouldn't conclude that the U.S. economy has become less competitive just because of what we see at the national level. And I think we showed that's right."

Of course, concentration is just one possible sign of market power, and economists have been exploring other ways to measure whether the economy has become less competitive. But Trachter and Sarte view their findings as a word of caution for advocates of breaking up large firms.

"Our paper shows that market concentration is not market power," says Sarte. "There's more work to be done, but there's enough evidence here to suggest that we should at least pause and do that work before making major policy changes." **EF**



Opportunity Zones

More Money, More Problems?

The promise and pitfalls of a new financing model for distressed communities

By Jessie Romero

Businesses and jobs are few and far between in the St. Paul's neighborhood of Norfolk, Va., a 200-acre area north of the Elizabeth River. Most of the residents live in three public housing complexes that were built in the 1950s, and the poverty rate is as high as 72 percent in some areas. In January 2018, after 13 years of planning and debate, the city council approved a resolution to demolish Tidewater Gardens, Young Terrace, and Calvert Square and replace them with mixed-use, mixed-income developments. In the resolution, the council noted that the residents' current housing left them "isolated, economically challenged and vulnerable to recurrent flooding."

The project won't be cheap. Merely tearing down the 618-unit Tidewater Gardens community will cost more than $7 million, and over the next decade the total redevelopment could top $1 billion. Norfolk and the Norfolk Redevelopment and Housing Authority have been awarded a $30 million grant from the Department of Housing and Urban Development, but it remains an open question how the remainder of the development will be financed. So city officials are excited about a provision in the Tax Cuts and Jobs Act of 2017 that is designed to draw long-term investment to struggling communities by offering tax advantages to investors who finance projects in "opportunity zones."

All of St. Paul's has been designated an opportunity zone, and the city is in serious talks with a number of potential investors. "Opportunity zones could really be the answer to help move the needle in the areas of the project where the city may not be able to leverage some of its traditional financing mechanisms" says Sean Washington, senior business development manager for the City of Norfolk and the city's designated opportunity zone lead.

Norfolk isn't the only city that's excited about the potential influx of opportunity zone investment; the program has generated enthusiasm nationwide and enjoys broad bipartisan support. But economics and past experience suggest it might be necessary to temper that enthusiasm with caution and patience.

Planning for Opportunity

The concept grew out of a 2015 white paper by Jared Bernstein, a senior fellow at the Center on Budget and Policy Priorities who also served as an adviser to Vice President Joe Biden, and Kevin Hassett, the current chair of the Council of Economic Advisers and a former scholar at the American Enterprise Institute. At the time, both Bernstein and Hassett were serving as advisers to the Economic Innovation Group (EIG), a bipartisan policy group that had just been founded to study entrepreneurship and innovative investment strategies.

"We wanted to think about policy solutions that could address the geographic divides that have come to define outcomes in the U.S. economy," says Kenan Fikri, director for research and policy development at EIG. "How could we move capital at a scale commensurate with the problem?"

Bernstein and Hassett's paper was short on details, but EIG sought out congressional partners who could flesh out the idea and develop legislation. Sen. Tim Scott, a Republican from South Carolina, was especially interested, and in 2017 he introduced the "Investing in Opportunity Act" with 14 co-sponsors from both sides of the aisle. The bill stalled in the Senate Finance Committee, but Scott continued to advocate for opportunity zones and eventually secured their inclusion in the 2017 tax bill.

Once the law was passed, states had until April 2018 to designate their opportunity zones from among a pool of eligible low-income census tracts, subject to certification by the Treasury Department. A census tract is a statistical area of between 1,200 and 8,000 residents. More than 8,700 opportunity zones, covering about 11 percent of the country, have now been designated across all 50 states, Washington, D.C., and five U.S. territories. About 10 percent of them are in the Fifth District. (See map on next page.) In Norfolk, 13 census tracts in addition to the three tracts in the St. Paul's area are opportunity zones. On average, according to an analysis by EIG, the poverty rate in census tracts that received the designation is around 30 percent, compared with just over 12 percent across the United States as a whole. More than one-fifth of adults in opportunity zones lack a high school diploma, and median family income in the zones is about $25,000 below the U.S. median.

Even before the law passed, community development professionals throughout the Federal Reserve System began meeting to discuss what role the Fed could and should play, says Jeanne Milliken Bonds, community development regional manager at the Richmond Fed. One key role the Fed has taken on is to convene local leaders, potential investors, and community members. "We want to bring people together to be educated, so that the people who live and own businesses in opportunity zones won't be at a disadvantage — so that the investment happens *with* them, instead of *to* them," says Bonds. To date, the Richmond Fed has convened several meetings throughout the district and participated in Norfolk's finance planning session. Most recently, the Richmond Fed helped lead a three-day educational tour of West Virginia for investors, legislators, and developers, among others; the tour was in partnership with West Virginia Forward, the West Virginia Department of Commerce, the Benedum Foundation, and the office of Sen. Shelley Moore Capito, R-W.Va.

Investing in an Opportunity Zone

What's in it for investors? The chief benefit is the opportunity to defer, and potentially reduce or even eliminate, capital gains taxes. (See sidebar.) Investors pay these taxes when they earn a profit from selling assets such as stocks, bonds, or property. But under the opportunity zone program, an individual or firm can roll those profits into an opportunity zone investment and defer paying the taxes until they sell or exchange the investment (or until 2026, whichever comes first). Depending on how long they hold the opportunity zone investment, they can also reduce the taxable portion of the deferred gain by up to 15 percent. In addition,

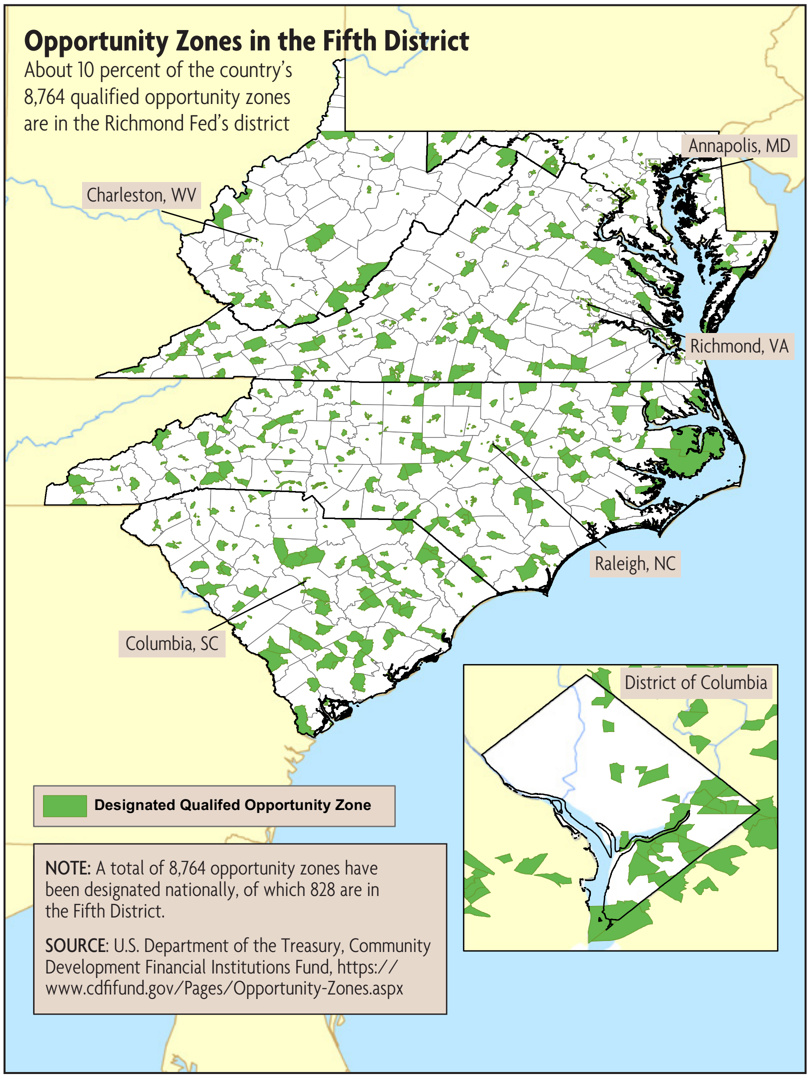
Opportunity Zones: The Nitty Gritty

Governors designated their state or territory's opportunity zones last year from among a pool of low-income high-poverty census tracts, with input from other state and local leaders. To be eligible, a census tract had to have either a poverty rate above 20 percent or a median household income no greater than 80 percent of the median for the state or broader metropolitan area. Up to 25 percent of the eligible tracts could be designated, using whatever criteria officials deemed appropriate. In Norfolk, for example, in addition to need, the mayor considered criteria such as proximity to institutions and access to transportation. Governors could also designate a small number of ineligible tracts that were contiguous with low-income tracts, provided the median household income wasn't more than 125 percent of the median in the adjacent qualifying tract. All designations were subject to certification by the Treasury secretary.

Investors can defer the tax on any prior gains they invest in a qualified opportunity fund (QOF) until the investment is sold or exchanged, or until Dec. 31, 2026, whichever comes first. If the QOF investment is held for longer than five years, the investor can exclude 10 percent of the deferred gain from taxation. If the investment is held for more than seven years, the investor can exclude 15 percent -- which means those who want to exclude the maximum amount need to get started by the end of 2019. Also, investors who hold their QOF investment for at least 10 years do not have to pay taxes on any gains on the amount they invested in the QOF, although they would still have to pay taxes on the original deferred amount, less any exclusion, by Dec. 31, 2026.

In addition to investing in real estate, QOFs may also purchase stock or take a partnership interest in new or existing businesses in opportunity zones. But not all businesses are eligible; the rules specifically exclude golf courses, tanning salons, massage parlors, race tracks, and liquor stores, among others.

— Jessie Romero



NOTE: A total of 8,764 opportunity zones have been designated nationally, of which 828 are in the Fifth District.

SOURCE: U.S. Department of the Treasury, Community Development Financial Institutions Fund, https://www.cdfifund.gov/Pages/Opportunity-Zones.aspx

investors may become eligible to pay zero capital gains taxes on any profits from the new investment. The EIG estimates that U.S. households and corporations have about $6.1 trillion in unrealized capital gains that could potentially be invested in opportunity zones.

"The opportunity zone program doesn't turn a bad deal into a good deal," says Clark Spencer, senior vice president for investments at Grubb Properties, a Charlotte-based real estate developer. "But to the extent you have a good deal, in my view this is one of the most significant tax advantages the federal government has ever given individual investors."

An opportunity zone investment has to be made through a special fund known as a qualified opportunity fund (QOF). QOFs are required to hold at least 90 percent of their assets in opportunity zone properties or businesses. Grubb Properties started a QOF in early 2019; it has raised about $25 million to date and has two active projects in North Carolina. Nationwide, around 134 opportunity funds have been created, representing more than $29 billion in capacity, according to data gathered by the professional services firm Novogradac. But they haven't done much actual investing yet — largely because they've been waiting for the Treasury and the Internal Revenue Service to clarify the rules of the game. With the release of a second set of proposed regulations in April 2019, many observers are hopeful that the money is about to start flowing. "We've gotten a lot more phone calls since the second tranche of regulations was released," says Washington. "Investors feel a lot more comfortable now."

Will This Time Be Different?

Since the early 1990s, the federal government had made a variety of attempts to stimulate investment in economically distressed areas. These programs, including empowerment zones, renewal communities, enterprise communities, and the New Market Tax Credit (NMTC), varied in their particulars, but in general they offered tax deductions or credits to businesses that open or expand in a designated area or that employ the area's residents. (Empowerment zone and enterprise and renewal community incentives have expired. The NMTC is slated to expire at the end of 2019, but legislation has been introduced to make it permanent.) One economic rationale is the need to solve the "first-mover" problem, in which the first person to invest in a new area has to do a lot of initial research and vetting that later investors can capitalize on — not to mention take on higher risk. As a result, there's less incentive for anyone to go first, even if there are profitable opportunities on the table. Empowerment zones and their ilk are intended to provide that incentive, with the hope of kick-starting investment and economic activity.

The evidence on the effectiveness of these programs is quite mixed. According to a 2013 article in the *American Economic Review* by Matias Busso of the Inter-American Development Bank, Jesse Gregory of the University of Wisconsin-Madison, and Patrick Kline of the University of California, Berkeley, the first round of federal empowerment zones in 1993 substantially increased employment and wages without increasing the cost of living. But other research has found insignificant effects or has found that positive effects are accompanied by rising rents and housing prices that displace current residents. There's also research suggesting that empowerment zones and similar policies simply shift economic activity from one place to another without any net gain.

In their white paper, Bernstein and Hassett described some factors that could limit the impact of previous tax-based policies. First, they concluded that the policies were overly complex, which both made it costly for businesses to comply and curtailed the activities they could undertake. They also argued that the incentives were generally too small to make a meaningful difference in firms' decisions and that they were poorly targeted to communities' needs. Perhaps most important, according to Bernstein and Hassett, was that the programs didn't facilitate any involvement by financial intermediaries such as banks or hedge funds.

So what's different about opportunity zones? Proponents point to several features that might make them more effective than past policies. One is that the zones were designated by state governors with considerable input from local leaders, who presumably know more about the needs and growth potential of their communities than do federal authorities. In addition, the opportunity zone program pools the resources of multiple individual and institutional investors, increasing the potential funds available and limiting the risk to any one person or firm. And depending on the size and profitability of the opportunity zone investment, the tax benefits are potentially quite large. "Rather than reward specific projects," says Fikri, "the goal of opportunity zones is to change investor behavior, to change the risk profile, and encourage investors who aren't the usual suspects in these communities. It's trying to change how the market itself behaves."

The Feature Is a Bug

These features of opportunity zones could also prove to be bugs, however. For example, the size of the potential tax break is what could lure new investment, but it depends on how profitable the investment is — which depends in part on rising property values and rents. So some observers fear that in many places, the opportunity zone designation will create or hasten a process of gentrification to the detriment of lower-income residents who don't own their homes and instead are forced out by rising rents. Lending weight to this concern, researchers at the Urban Institute found that since 2000, the designated tracts had experienced greater increases in median family income, housing costs, and the share of residents with at least a bachelor's degree — all proxies for gentrification — than eligible tracts that were not designated. An analysis by Zillow found that after the final opportunity zones were announced, real estate sale prices increased 25 percent year over year in designated zones versus 8 percent in tracts that were eligible but not designated. Before the final zones were announced, prices in all the eligible areas had increased at about the same pace.

"Gentrification is a legitimate concern, and it will probably happen in some places," says Bonds. "But there are controls that can be put in place, for example, through a city's zoning and permitting process. If cities are planning ahead and sharing information with the community, it lowers the odds it will happen."

What's different about opportunity zones? Proponents point to several features that might make them more effective than past policies. But these features could also prove to be bugs.

That planning is part of Sean Washington's job. "We're working on the guardrails," he says. "What can we do to ensure that the purpose of opportunity zones — to help people — is actually accomplished?"

Local leaders know their communities, but they also face local political considerations. So zones might have been chosen not based on how many people would be helped but rather on satisfying particular constituents. Leaders also might have wanted to choose areas that they knew would attract a lot of investment to their cities, which means it's likely the investment would have occurred without the benefit of government involvement. Skeptics view the designation of areas like Long Island City in Queens (already home to JetBlue and Ralph Lauren); essentially all of Portland, Ore. (seen by many as ground zero for hipster culture); and North Miami (where a $4 billion luxury condo development is already underway) as evidence that many opportunity zones are likely to benefit investors more than low-income Americans. These areas aren't representative of all opportunity zones; the Urban Institute also found that designated tracts did have higher poverty and unemployment rates than eligible tracts that weren't designated. At the same time, they did not have less access to capital as measured by existing commercial and residential lending.

Finally, it's possible that a lot of QOF money could flow to cities that already have "shovel-ready" projects (and might have attracted investors anyway). "That's certainly a hazard in this first year," says Fikri. "When something is totally new, it's easier if something is already in the pipeline and can be repurposed to fit the program. But we're optimistic that as the second wave of investments comes, the incentive will be meaningful on the margin at unlocking new capital." Fikri also notes, however, that opportunity zone projects will be most likely to help the zones' residents when they're paired with workforce development and educational programs. "More adults in opportunity zones don't have high school diplomas than do have college degrees," he says. "There's a lot more work to be done to ensure that the most disadvantaged people can take advantage of the opportunities." **EF**

Readings

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CORPORATE CRYPTO CROWDFUNDING

The technology behind cryptocurrencies shows promise for raising capital but has also drawn scrutiny from regulators

By Tim Sablik

Transferring computer files used to require loading them onto a flash drive, burning them to a CD, or (if you are old enough to remember) writing them to a floppy disk. Today, everything is in the cloud. Services like Dropbox, Google Drive, and Apple's iCloud allow users to upload files to remote computer servers and retrieve them later from any device. Cloud storage systems tend to be owned by large corporations. But American computer scientist Juan Benet thought he had a better idea: What if, instead of relying on companies to build and maintain servers for cloud storage, it was possible to share excess storage capacity on personal computers?

That's what Protocol Labs, the company Benet founded, set out to do in 2014. Drawing inspiration from Bitcoin, the decentralized payment system that had launched in 2009, Protocol Labs' Filecoin would be a new digital currency used exclusively on a decentralized cloud storage network. Users could earn filecoins by offering storage on their computers for use on the network. What's more, the sale of filecoins could fund the creation of the network itself.

Protocol Labs' $257 million sale of filecoins was an example of what has come to be known as an initial coin offering, or ICO. In an ICO, entrepreneurs sell bitcoin-like digital tokens to raise capital for their businesses, similar to how companies have traditionally raised money by selling stock in an initial public offering (IPO). Like stocks, tokens are typically tradeable, but unlike stocks, they usually don't confer any ownership of the issuing company. Instead, they are often redeemable in the future for some good or service developed by the issuer. In 2017 and 2018, ICOs raised more than $27 billion worldwide — nearly half as much as traditional IPOs in the second quarter of 2018 alone.

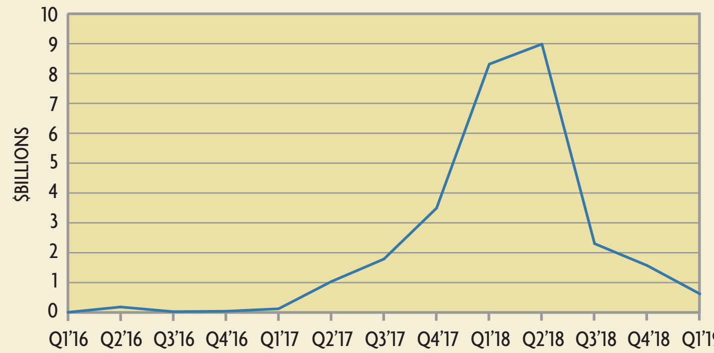
ICOs have attracted the attention of more than just digital startups like Protocol Labs. The venerable Eastman Kodak Company got in on the action by selling KODAKCoins that could be used to purchase rights to digital photographs on an online platform. Early proponents saw ICOs as a way to both enable new decentralized platforms and cheaply raise funding by avoiding traditional corporate finance channels and going directly to the customers.

"The idea was that ICOs would be transparent, secure, and self-regulating, operating outside of national borders and regulatory frameworks," says Nick Morgan, a partner with the law firm Paul Hastings who focuses on securities regulation. "That turned out to be incorrect."

Through a series of actions starting in mid-2017, the U.S. Securities and Exchange Commission (SEC) made it clear that most tokens sold in ICOs met the definition of a security and were therefore subject to the same requirements as traditional stock offerings. Perhaps because of this increased attention from regulators, ICO activity has slowed dramatically of late, inviting speculation that the ICO boom had mostly been about evading regulatory scrutiny. In the first quarter of 2019, ICOs raised about $600 million compared with more than $8 billion over the same period the year before. Nevertheless, ICOs' rapid rise captured the attention of economists who are exploring whether the technology behind cryptocurrencies might improve how corporations raise money.

A Flash in the Pan?

Total Funds Raised in ICOs Worldwide



SOURCE: CoinSchedule

Funding Phenomenon

Cryptocurrencies such as Bitcoin proved that it was possible to assign and track ownership of digital objects without a central authority. The technology that enabled this was actually a variant on an old idea: the simple ledger. Bitcoin's ledger, known as the blockchain, contains a record of every transaction ever made using the cryptocurrency. The blockchain's new twist on the ledger was to distribute a copy to all Bitcoin users, making all transactions public knowledge and also making it impossible for any one user to alter the ledger and fake a transaction without the consent of a majority of the network. This allowed Bitcoin to serve as a decentralized payment method that was virtually impervious to fraud.

At first, the blockchain was simply a tool for Bitcoin transactions. But users soon began to explore other functions, such as embedding contracts into the blockchain. These "smart contracts" are similar to computer programs: They specify actions that occur automatically when certain conditions are met. In 2012, a software engineer and Bitcoin enthusiast named J.R.Willett suggested that such contracts could be used to raise funding for new projects or even entire companies. In a white paper, he explained how someone could write a smart contract that laid out a business proposal and allowed anyone to purchase a stake in that business in exchange for bitcoins. Those bitcoins would provide the funding to create the new venture, fulfilling the same role as traditional venture capital.

No one jumped on Willett's idea immediately, so he took it upon himself to launch Mastercoin in 2013 as a proof of concept. He raised half a million dollars in bitcoin, and the first ICO was born. It took a few more years for ICOs to catch on, but by 2017, the market took off. (See chart.) Some advocates speculated that it might replace traditional corporate funding entirely, but economists have generally been more skeptical of its prospects.

"In a normal financial setting, there doesn't seem to be any advantage to using an ICO instead of traditional equity funding," says Joshua Gans, an economist at the University of Toronto who studies technological innovations and industrial organization.

In a paper with Christian Catalini of the Massachusetts Institute of Technology, Gans examined where the value of tokens sold in ICOs comes from. Unlike traditional securities, the value of which is tied to the profitability of the firm over its lifetime, tokens are only worth what someone would be willing to pay for the underlying good or service they represent. To be sure, investors may inflate that value by overestimating how much the good or service will ultimately be worth. Token issuers face a tension between raising more money upfront by making the tokens an attractive store of value for investors and keeping the price stable so the tokens can actually function as a medium of exchange on the platform for customers.

"That limits how much money an ICO can really raise," says Gans. "That suggests that if we are seeing ICOs, it may be because there are constraints on the ability of entrepreneurs to access traditional equity markets."

Expanding the Market

Open access to funding is one of the benefits often attributed to ICOs. Startups typically have a harder time obtaining funding than established firms. Their ideas are untested, making them a risky bet for banks and investors alike. Angel investors and venture capital firms specialize in taking on greater risks to give entrepreneurs a chance, but research indicates that such investors are geographically concentrated in places like the San Francisco Bay area or New York, and most venture capital investments are made locally. This could limit the startups that are able to obtain such funding. In concept, ICOs expand the venture finance market to the entire world, allowing anyone with an internet connection to invest in a new idea.

Another advantage of ICOs is that they allow developers to presell their ideas to gauge market interest before actually investing in their product or service. ICOs are similar to crowdfunding in this respect. For example, Eric Migicovsky initially tried to raise money for his Pebble smartwatch from angel investors. When he fell short of his goal, he turned to crowdfunding platform Kickstarter to sell the idea directly to consumers. His crowdfunding campaign raised more than $10 million — more than 100 times the amount he needed. Like crowdfunding, ICOs could help bring ideas to market that institutional investors might pass on. And for firms attempting to build an online platform, the ability to gauge demand and establish a network of users before doing any work may be even more valuable than the money they raise.

"One of the benefits of an ICO is that you can see how many people take up the offer and that gives you an idea of how aggressively to build out your product or service," says David Yermack, a business economist at New York University.

Cost is another factor that may limit entrepreneurs' access to traditional financing.

"The cost of raising money in an IPO is severe," says Yermack. "You typically pay a 7 percent underwriting spread and then usually have your shares discounted by 10 percent or more by the underwriter before they sell them on the market. So right there you are at a 17 percent discount, and that is not counting the overhead cost of regulatory compliance, delays, and the legal liability you expose yourself to."

Proponents of ICOs have argued that they are an easier source of startup funding, which could enable more entrepreneurs to bring their ideas to market. But critics allege that the savings touted by ICO champions, particularly during the market's high point, stemmed largely from avoidance of important regulatory safeguards, making the ICO market ripe for fraud.

Wild, Wild West?

Whether entrepreneurs are trying to raise money via traditional channels or ICOs, the process suffers from the same problem: asymmetric information. Simply put, the sellers know more about the project, and its likely chances of success, than the investors.

One response to this problem is to require sellers of corporate securities to disclose information to investors, as the SEC does in the United States. Firms looking to go public through an IPO must disclose information similar to what public companies are required to include in their annual reports to the SEC, such as financial statements and a description of the business. To determine whether something a company is selling to the public is a security, the SEC uses criteria established in a 1946 U.S. Supreme Court case involving the sale of Florida orange groves. According to this so-called *Howey* test, sale of a security involves "an investment of money in a common enterprise with profits to come solely from the efforts of others."

In arguing that ICO tokens were not securities, many issuers focused on the last part of the test. They have argued that ICO tokens are just a way of preselling goods or services to customers, not investment vehicles. Some have also maintained that the decentralized nature of blockchain companies means that their success, and the ultimate value of the tokens, is not dependent on the efforts of organizers.

But in a series of reports, enforcement actions, and the detailed framework it released in April, the SEC has made it clear that virtually any involvement by an "active participant" (such as a promoter or organizer) in the ICO process that contributes to the value of the tokens would be enough to qualify those tokens as securities. For example, the Decentralized Autonomous Organization (DAO), which launched its ICO in 2016, claimed to be a decentralized corporate finance network that would allow token holders to vote on future projects to fund using the money raised in the ICO. In 2017, the SEC published a report on the DAO and argued that it was not as decentralized as it claimed. The parent group that created the DAO remained heavily involved in its governance by appointing "curators" to select the proposals that DAO token holders could vote on. This and other factors led the SEC to conclude that the DAO's tokens should have been registered as securities.

Regulation is not the only solution to reduce asymmetric information in security markets, however. ICO organizers also have market incentives to be transparent with investors. In a paper with Sabrina Howell of New York University and Marina Niessner of AQR Capital Management, Yermack found that groups that published white papers describing their proposal or the underlying code of their platform were more likely to have a successful ICO. Previous venture capital investment in the project was also highly correlated with ICO success.

To be sure, market incentives were not enough to prevent widespread ICO fraud. According to a 2018 study by the Satis Group, a token advisory firm, nearly 80 percent of ICOs were determined to be scams, meaning there was evidence that the project leaders had no intention of actually developing their project with the proceeds from the token sales. But those scams accounted for just 11 percent (roughly $1.3 billion) of funds raised in the ICO market. In contrast, the 15 percent of ICOs that succeeded and issued tokens that went on to trade on exchanges accounted for about 70 percent of the total funds raised.

Looking closer, Satis Group found that just three projects accounted for most of the money raised by ICO scams, which suggests that while there was no shortage of frauds in the market, investors largely avoided them. In fact, two researchers have argued that investors may have even been too conservative. Hugo Benedetti and Leonard Kostovetsky of Boston College studied more than 4,000 ICOs and found that, if anything, they seemed *underpriced* given the average performance of tokens, even after accounting for the presence of frauds and failures.

It remains to be seen whether evading regulations or exuberance over cryptocurrencies in general were the main drivers of ICO growth or if entrepreneurs will still be drawn to ICOs over traditional fundraising for other reasons.

"There is definitely some regulatory arbitrage and quite a bit of fraud that has happened," says Howell. "But I think ICOs also open the possibility for some exciting new business models."

New Possibilities

Through the blockchain and smart contracts, ICOs could be used to fund the development of decentralized platforms. Examples of such platforms include Wikipedia and Linux. Both are maintained by volunteers rather than an owner or group of owners.

"That is appealing to some people because you can avoid a single point of failure, and you can potentially have a more democratic form of governance for the platform," says Howell.

The challenge is that it can be hard to motivate people to work for free. Relying on volunteers may result in few decentralized platforms being built. Through an ICO, however, it is possible to raise money to pay for the development of a platform without necessarily giving the developers control over it.

"You could remunerate the people who actually create a platform's value rather than the person or people who built it," explains Howell. "For example, you could imagine a decentralized version of Uber where the drivers actually have control over the platform and are earning a larger share of the rents from that service."

Still, it isn't clear how easy it would be to create such a platform in practice, even with an ICO. As the SEC found, one such attempt — the DAO — was not as decentralized as it claimed.

Smart contracts present other interesting possibilities beyond decentralization, however. For example, they could potentially solve long-standing problems with corporate governance and share management.

"It's surprising, but most companies today don't know who their shareholders are," says Yermack. The existing share registration system makes it challenging to conduct accurate shareholder votes, hampering the effectiveness of shareholder oversight over public companies. The blockchain could make it easier to see who owns shares and make it easier to conduct votes, potentially bringing along some other benefits as well.

"You could have much more transparency into things like shareholder activist purchases, executive compensation, and managers' trading of shares for compensation or investment purposes," says Yermack.

Of course, it is possible to use smart contracts and reap these benefits without ICOs, but the fact that token sales already utilize the blockchain may make them a natural candidate for testing these theories.

A Flash in the Pan?

With the recent slowdown in ICO activity, some observers think that the market may disappear as quickly as it came. At the same time, the SEC has made it clear that it doesn't intend to treat all ICOs as security offerings. It recently ruled that tokens issued by TurnKey Jet Inc., which would allow holders to charter a jet, did not need to be registered as securities because they were only tradeable among members of the program. Some countries, such as China and South Korea, have taken a stronger stance and chosen to ban ICOs entirely. Others, such as Singapore and Switzerland, have been more permissive. Worldwide, this suggests that the ICO experiment could continue, at least for now. But it may take more time to fully determine the benefits of ICOs, if any.

"The people who are interested in token offerings now tend not to view them as a way to reduce the regulatory cost of raising money," says Morgan. "Rather, they believe the technology offers them some benefits for the business enterprise they are trying to get off the ground."

The benefit of raising money in advance for a project while establishing a base of eager customers has proven useful throughout history. The Royal Albert Hall in the 19th century and the Centre Court of Wimbledon in the early 20th century were both funded in part by preselling seats. Digital tokens open up the opportunity to conduct such presales for many more types of goods or services, but it remains to be seen whether firms engaging in ICOs can deliver on their promises.

"We've seen a lot of ICOs, but very few products actually come to market," says Gans. "So it's very much a question whether they'll be around in the long term." **EF**

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Enrico Moretti

Geographic differences in economic well-being, it seems, have become increasingly salient in American policy and political conversation. These differences are a longtime concern of University of California, Berkeley economist Enrico Moretti. In his research, he has found that the sorting of highly educated Americans — and high-paying jobs requiring a lot of education — into certain communities has led to other communities falling behind. Moreover, they've been falling behind faster economically as time goes on. This pattern, in turn, has been reflected in other socioeconomic differences, including divorce rates and life expectancies.

Moretti's interest in American geographical sorting began during his days as a Ph.D. student at Berkeley, where he arrived after his undergraduate education in his native Milan. At first, he just wanted to fill in some blanks in his knowledge of America. "I started looking at data from the U.S. census," he says. "Just out of curiosity, wanting to know more about this country, I started looking at the different city averages of whatever the census could measure — earnings, level of education of the workforce, the type of industry. I suspected there were big differences, but I didn't know how large the differences were." He went on to write his Ph.D. dissertation on the benefits in terms of higher earnings that less-educated workers obtain from being in a city with a large share of workers with college degrees.

Along with a long list of articles on these matters in top economics journals in the time since, Moretti's 2012 book for general audiences, *The New Geography of Jobs*, has received widespread attention (and was on former President Barack Obama's short list of recommended nonfiction books in a Facebook post last summer).

Moretti has some experience as a self-described unskilled worker himself, spending a year working with special-needs children as part of the staff of the social welfare department of a town outside Milan. "I was a low-level aide, just being there with the kids, mostly. But it has stayed with me in many ways. It's hard to think of a more consequential type of activity. As much as I think that academic work is important and socially relevant, it is not even close to this."

In addition to his current position at Berkeley, Moretti has been on the faculty of UCLA and has been a visiting scholar at Columbia, Stanford, and Yale. He is editor-in-chief of the *Journal of Economic Perspectives*.

David A. Price interviewed Moretti in his office at Berkeley in March 2019.

PHOTOGRAPHY: BRITTANY HOSEA-SMALL

EF: During perhaps the first decade or so of the World Wide Web, there were numerous predictions that geography would disappear or almost disappear as an issue in knowledge work. It seemed as if white-collar workers, if one believed the predictions, would be able to work from anywhere.

Moretti: Yes.

EF: What happened?

Moretti: It's one of the main paradoxes of our times. The explosion of the internet, email, and cellphones democratizes the access to information. In the 1990s, people thought it would also make the place where the company is located or where workers live much less important.

The idea of *The World Is Flat* by [Thomas] Friedman was indeed that location would lose its importance. Because I can sit in front of a laptop in rural Tibet and have access to the same information that I have if I am in the center of Silicon Valley in downtown Palo Alto, location was expected to matter less for workers and firms.

But what we have seen over the past 25 years is that the opposite is true: Location has become more important than ever before, especially for highly educated workers. The types of jobs and careers that are available in some American cities are increasingly different from the ones available in other American cities.

There's nothing new in the fact that some areas are economically more dynamic than others and offer better labor market opportunities; that's always been the case. What is different today is how large the difference between the most successful labor markets and the least successful labor markets has become and how fast they are growing apart. It's a paradox because it is true that we can have access to a lot of information and communicate easily from everywhere in the world, but at the same time, location remains crucial for worker productivity and for economic success.

In the first three decades after World War II, manufacturing was the most important source of high-paying jobs in the United States. Manufacturing was geographically clustered, but the amount of clustering was limited. Over the past 30 years, manufacturing employment has declined, and the innovation sector has become a key source of good jobs. The innovation sector tends to be much more geographically clustered. Thus, in the past, having access to good jobs was not tied to a specific location as much as it is today. I expect the difference in wages, earnings, and household incomes across cities to continue growing at least for the foreseeable future.

> The presence of agglomeration economies and the advantages of geographical agglomeration don't necessarily imply that the same process applies forever. When there are shocks large enough, we see entry and we see exit.

EF: Alfred Marshall, as you know, wrote about so-called agglomeration economies as long ago as 1890. Presumably, he was thinking about manufacturing when he wrote about that. Why are the trends you're describing becoming so much more important now? What is different about these "innovation sector" industries?

Moretti: The microeconomic foundations of agglomeration economies represent an area of active research right now. We have a general sense of the magnitude of the economic benefits of agglomeration. We are still trying to empirically assess the relative importance of the microeconomic channels that may generate those benefits. There are three that have been identified in the literature and are likely to play a significant role in practice. The first one is the existence of knowledge spillovers, also known as human capital spillovers: the fact that our human capital depends not only on where we go to school and how much schooling we get, but also on the people who surround us and from whom we learn.

The second one is the matching advantage offered by thick labor markets. In the case of specialized workers, who often have idiosyncratic skills, thick labor markets allow for a better match with firms. For example, if you are a biotech engineer specialized in, say, biofuel and you work in Silicon Valley, where at any moment in time there are a thousand biotech firms looking for biotech engineers, you are more likely to find the one that studies biofuels than if you are the same biotech engineer located, say, in Chicago, where at any moment in time there are fewer biotech firms looking for engineers. A better match means a better career for the workers. At the same time, it is advantageous for firms because it results in higher productivity.

The third channel is the thickness of the market for specialized services. Again, if you are in an area where there are many other firms like yours and they all need a very specialized type of vendor, you are more likely to find it in an area where there's a big agglomeration of firms in the same sector.

All three factors exist in manufacturing, of course. But they are much stronger for firms and workers that engage in innovation.

That is why we see some agglomeration of traditional manufacturing firms, but when we compare it to agglomeration of firms in the innovation sector, the latter is much stronger. I have just finished a new project where I study how locating in a high-tech cluster improves the productivity and creativity of inventors. If you look at the major fields — computer science, semiconductor, biology, and chemistry — you see a concentration of inventors that is staggering. In computer science, the top 10 cities account for 70 percent of all the innovation, as measured by patents. For semiconductors, it's 79 percent. For biology and chemistry, it's 59 percent.

This means that the top 10 cities generate the vast majority of innovation in each field. Importantly, the share of the top 10 cities has been increasing since 1971, indicating increased agglomeration.

In a world where all the information is available online, you would expect the opposite to happen, and yet we see more concentration of inventors today, as measured by my data, compared with the early '70s. I think it's because the three channels are particularly strong for these types of workers and firms.

EF: When you talk about innovators and innovative industries, you mention semiconductors and life sciences. Are there other industries that for you fit in this category?

Moretti: The innovation sector is broad and diverse, and it's not just information technology or semiconductors. Life sciences is a huge part of it, obviously. But there are other parts of the economy that are innovative, from entertainment to finance to marketing.

What they have in common are two things. One is that they make intensive use of human capital. The other one is that they make products, whether goods or services, that are new and unique and hard to outsource, at least in the short run.

EF: In looking at these phenomena, you've written about what you call the Great Divergence among cities. What is diverging? And should we be worried about it?

Moretti: What is diverging is, on a simple level, where good jobs locate.

The data tell us that since the 1980s, average salaries, especially for skilled workers, have been diverging. The average salaries of workers with a college degree or a master's degree in places like San Francisco, New York, Seattle, Boston, Raleigh, Austin, or D.C. have been growing at a much more rapid pace than the salaries for college graduates or workers with a master's degree in other cities. These cities started with higher salaries to begin with but have gained more relative to other cities.

The share of workers with a college degree in the labor force is also diverging, with the most successful cities growing significantly faster. These cities started with a higher share of college graduates, and they have been attracting even more.

Companies in industries that are very advanced and very specialized find it difficult to locate in areas where they would be isolated. Nobody wants to be the first to move to a city because they're going to have a hard time in finding the right type of specialized workers. And it's hard for workers with specialized skills to be first because they're going to have a hard time finding the right job. It's an equilibrium in which areas that have a large share of innovative employers and highly specialized workers tend to attract more of both. It is difficult for areas that don't have a large share of innovative employers and highly specialized workers to jump-start that process. Ultimately, that is what generates the divergence across cities.

To be clear: When I'm talking about cities, I'm referring really to what the census defines as metropolitan statistical areas. The definition includes not one municipality but the entire local labor market. For example, here it would be not just the municipality of San Francisco or Berkeley, it would be the whole Bay Area.

EF: One can imagine a dystopian conclusion to this story where parts of the country continually grow rich without limit while others become poor without limit. Is there a natural stopping point to the process, or is this a future that we can look forward to?

Moretti: There are two factors to consider. First, in many successful cities, housing and commercial real estate tend to become scarcer and therefore more expensive. This effect reflects both geographical limits and local housing policies that constrain the supply of new housing in many cities. This is an important limiting factor, as firms need to pay workers more just to compensate them for the cost of living.

Enrico Moretti

➤ Current Position

Michael Peevey and Donald Vial Professor of Economics, University of California, Berkeley

➤ Education

Ph.D. (2000), University of California, Berkeley; Laurea (1993), Bocconi University

➤ Selected Publications

"Housing Constraints and Spatial Misallocation," *American Economic Journal: Macroeconomics*, 2019 (with Chang-Tai Hsieh); "Who Benefits From Productivity Growth? Direct and Indirect Effects of Local TFP Growth on Wages, Rents, and Inequality," NBER Working Paper, 2018 (with Richard Hornbeck); "The Effect of State Taxes on the Geographical Location of Top Earners: Evidence from Star Scientists," *American Economic Review*, 2017 (with Daniel Wilson); "Local Economic Development, Agglomeration Economies and the Big Push: 100 Years of Evidence from the Tennessee Valley Authority," *Quarterly Journal of Economics*, 2014 (with Patrick Kline); "Real Wage Inequality," *American Economic Journal: Applied Economics*, 2013; *The New Geography of Jobs*, Houghton Mifflin Harcourt, 2012; "Social Learning and Peer Effects in Consumption: Evidence from Movie Sales," *Review of Economic Studies*, 2011

More generally, I don't think we should think of this as a process that does not allow any entry into or exit from the group of successful cities. Let me give you some examples. On the entry side, two of the most striking examples of local economic success over the past 40 years in the United States are Austin, Texas, and Raleigh-Durham, N.C. Austin in the '80s was not a very thriving economy, certainly not a global center of innovation that it has become today. It was a sleepy provincial labor market that started attracting tech jobs — probably after [Michael] Dell started his company, possibly because of other reasons — and became one of the most dynamic labor market in the United States over the past 30 years.

Raleigh-Durham, just like Austin, wasn't much of a global innovation center in the '60s and '70s. The employment boom associated with the Research Triangle took place over the past 30 years.

Seattle in the '70s didn't have much of a software industry. In fact, outside of Boeing, there was nothing in Seattle that would predict it becoming a global center of innovation. It was Bill Gates moving Microsoft from Albuquerque, N.M., to his hometown that jump-started the Seattle software cluster. Through its success, Microsoft became the anchor for the Seattle innovation sector, a sector that now includes not just software, but also internet, life sciences, and many other parts of the tech world.

These are three examples of cities that entered the group of successful innovation-driven local economies. By contrast, consider Rochester, N.Y. It used to be a major innovation cluster; it accounted for a significant share of U.S. patents in the '80s and early 1990s. Kodak and Xerox were major innovators in the local economy. Then Kodak's main product went out of business because people started taking digital pictures and stopped buying film. Xerox had its own problems and laid off a lot of engineers. As a consequence, Rochester experienced a major collapse in its local high-tech sector and exited the group.

The point I'm making is that the presence of agglomeration economies and the advantages of geographical agglomeration don't necessarily imply that the same process applies forever. When there are shocks large enough, we see entry and we see exit. Agglomeration economies do offer a strong advantage to certain cities, for some periods of time, but they don't imply that this process is deterministically bringing the United States toward complete concentration of economic activity.

EF: How important are universities like Berkeley and Stanford to the rise of an industry cluster?

Moretti: I think universities do play an important role, but it's more nuanced than a lot of people seem to think. Many observers note that Stanford is in the middle of Silicon Valley and infer that Silicon Valley is located there because of Stanford. Yet there are 330 metropolitan statistical areas in the United States. Most of them have colleges or universities, many have very good colleges and universities, but only a handful of these metropolitan areas have sizable private-sector innovation clusters.

St. Louis has Washington University, an excellent research university, but it doesn't have much innovation outside the border of the university. Ithaca has Cornell, another excellent research university, but there aren't that many private-sector jobs in innovation outside the university. New Haven has Yale, one of the most prestigious universities in the world, and Santa Barbara has UC Santa Barbara, which has several Nobel Prizes and terrific engineering and physics departments, but those cities aren't important centers of private-sector innovation.

As for Stanford: When [William] Shockley decided to relocate from the East Coast and founded the first semiconductor firm in Silicon Valley, Stanford was not a powerhouse in engineering. Stanford was a good university, but there were much better engineering departments on the East Coast. Arguably, the Stanford engineering department *became* one of the leading engineering departments, thanks in part to the rise of Silicon Valley. The growth of Stanford as a research university was as much an effect as a cause of the growth of Silicon Valley.

I do think universities play an important role once a cluster starts developing. It is difficult for cutting-edge high-tech firms to be far from academic research. It's a symbiotic role where universities foster private-sector research and, at the same time, are strengthened by the presence of an innovation cluster.

EF: Much has been written about "coolness," of appealing to a bohemian creative class, as a development strategy for cities. The idea is attracting educated workers and their companies by trying to foster a certain cultural feeling. How effective is that?

Moretti: Much has been written about it. There are scholars who have suggested that coolness is a recipe for local economic development. I tend to be a little bit skeptical of that simplistic recipe. If you look at the history of U.S. cities, coolness often follows economic prosperity. In other words, the types of amenities that college graduates and other workers with high-level schooling tend to appreciate are often the effect of having a lot of them around and of having a lot of disposable income to be spent in an area rather than the ultimate cause of economic growth.

I'm not saying cultural amenities don't play a role, but I think it's hard to see examples of cities where the mayor decides to increase the coolness of the city and as a consequence the city becomes a thriving local economy with thousands of good jobs. I think it is more typical to see areas where economic growth is followed by improvements in local amenities — whether it's restaurants, museums, entertainment, or quality of life. It's an equilibrium. Empirically, improvements in cultural amenities tend to be as much an effect of economic growth as a cause.

EF: Do you think the rise of two-career couples and especially assortative mating among the highly educated has contributed to the divergence among cities' paths?

Moretti: It plays an important role. There is good research that shows that larger labor markets have an advantage over medium-sized and smaller labor markets because larger labor markets offer more job opportunities for both members of a couple — and this is increasingly valuable as assortative mating increases.

In a world in which only one member of a couple works, a larger city offers some advantages, but in a world in which both members of the couple work and both members are looking for professional jobs, a larger labor market is particularly attractive.

The more specialized the skills of the two members of the couple, the more city size matters. If they are not very specialized, size matters but not as much; if they are both very specialized, the empirical evidence suggests that larger cities are significantly better for their careers. It's not impossible for such couples to locate in small- or middle-sized cities, but it may be costly in terms of wages and earnings.

EF: A lot of your work looking at the divergence of cities has been looking at the U.S. context. Is this a global phenomenon? Have you seen the same thing in your native Italy, for example?

Moretti: It's a global phenomenon. It emerges most clearly in the United States given the size of the country, its geographical differences, and the fact that U.S. cities are more spatially separated than ones in Europe. But the same economic forces are also at play in European countries. Notably, we also see similar political dynamics.

Take the United Kingdom, for example. The same political polarization that we observe in the United States, with the deep divide in voting patterns between heartland states and coastal states, is clearly present in the United Kingdom. The polarization of the Brexit vote tightly follows the economic divide between the most advanced local labor markets in London and other parts of southern England on one side and the declining communities of the U.K. rust belt on the other side. We see a similar economic and political divide in France, where there are growing differences in labor market opportunities between the largest cities, especially Paris, and small- and medium-sized communities. Just like in the United States and the United Kingdom, the economic divide in France results in a growing political divide, with the yellow vests being the most recent and visible manifestation.

We see a large economic divide in Italy as well. The difference between cities like Milan, Bologna, and the industrial areas of the northeast, on the one hand, and southern regions, on the other, has been growing. Unlike in the United States and the United Kingdom, in Italy and France geographical differences manifest themselves mostly as differences in local unemployment rates rather than differences in average wages. That's because of the labor market institutions: In Italy and France, wages are largely set by collective bargaining and therefore can't vary much across cities. But unemployment rates do.

Geographical divergence is also taking place in developing countries. Consider, for example, the way that China or India have developed in the last 20 years. Shanghai and Beijing essentially look like western cities in terms of productivity, salaries, and standard of living. By contrast, the western part of China has grown but by much less than coastal cities. The same is true when you look at India. Bangalore is India's Silicon Valley, and in many respects its labor market is not very different. At the same time, the state of Bihar has grown but much less, and it has an economy that looks a century behind Bangalore. Overall, I think the economic forces we see in action in the United States are also in action in many countries, including those at different stages of development.

EF: In America, statistics indicate that we have become less willing over time to relocate in pursuit of economic opportunity. Why do you think that is?

Moretti: Geographical mobility in the United States has been declining. Americans remain more mobile than Europeans, but they are less geographically mobile than they were 30 years ago.

Propensity to move collapsed during the Great Recession. Since then, it has recovered slightly, but the long-run trend has been clearly downward. College graduates remain more mobile than high school graduates and high school dropouts by a vast margin. But in general, all groups in this country have become less mobile. I don't think we have determined the exact reasons yet. It's an important open question.

On the one hand, lower mobility could in principle be a positive development if it reflects stronger attachments to communities or better information about job opportunities elsewhere. In the past, there were probably a lot of errors in mobility decisions. Since one had to move to a city to find out what jobs were there, some workers probably had to move repeatedly before finding the right job. Today, internet job sites provide much more information on job openings in other cities and probably lower the amount of misdirected mobility.

On the other hand, lower mobility could be a negative development if it reflects outside constraints, such as credit or housing constraints. If you think about the places that in the '50s and the '60s were thriving in the United States — Detroit, for example — they were places where the average family could move and quickly find affordable housing. Today's boom towns, whether San Francisco or Boston or D.C. or Seattle, are quite different in this respect: Housing is much more constrained and expensive. This makes it harder for the average family to relocate there. I'm not saying this is the only factor or the main factor, but I suspect housing may be an important factor.

EF: In February, as you know, Amazon stated that it will not build a headquarters in New York City as it had originally announced in November 2018. Was this a bad outcome for New York? Or can there be too much of a good thing for a city that's already prospering?

Moretti: Forgoing Amazon had a cost for New York in terms of missed diversification. The tradable sector of New York City — the type of jobs that engage in producing services sold outside New York City — is historically heavily dependent on finance. Diversification of the New York labor market is a good thing for the city because it is too dependent on one sector.

The cost to New York is represented not only by the 25,000 forgone Amazon jobs, but more importantly, also by the forgone agglomeration effects Amazon could have brought to New York. By having Amazon in New York, the city could have attracted more internet and software companies. My work suggests that the indirect agglomeration benefits would probably have been even more important than the direct effect of adding 25,000 new jobs inside Amazon. Overall, the city has forgone a large number of good jobs, not just within Amazon but from an entire ecosystem that could have formed around Amazon. Keep in mind that while finance still offers excellent average salaries, over the past 10 years, salaries in tech have grown more than salaries in finance.

The New York economy, of course, will survive. Without Amazon, it might grow less and might be less diversified. But it remains a thriving regional economy with strong fundamentals.

An important related question is what does this mean for the national economy as a whole. Those 25,000 Amazon jobs are going to locate somewhere else in the United States, so from the national point of view, those jobs are not lost. However, from the national point of view, there are aggregate advantages stemming from the concentration of high-tech employment. In a new paper I just finished, I find that by concentrating geographically, high-tech firms and workers become more productive and more innovative, which has aggregate benefits for the national economy. In particular, if you take the current location of inventors in the United States, which is now very concentrated in a handful of locations, and you spread it across all cities, to the point where you equalize the number of inventors in each city, the U.S. aggregate production of innovation in the United States would decline by about 11 percent as measured by number of new patents. Thus, the concentration we observe in tech employment has drawbacks in the sense that it increases inequality across cities, but at the same time, it is good from the point of view of the overall production of innovation in the country. I see this as an equity-efficiency trade-off.

EF: As you know, within regional economics, there are long-running disagreements about the roles of so-called place-based and people-based policies. What do those

terms mean to you, and where would you put yourself on that continuum?

Moretti: Traditional government aid is people based, in the sense that the government targets some individuals or families for transfers: welfare payments, food stamp, housing assistance, or other forms of aid. The growing divergence in economic fortunes of U.S. communities has increased the political demand for place-based policies, where entire communities are targeted for aid, not just specific individuals.

There's a debate among economists on whether government aid should focus on individuals and families or whether it should extend to entire communities, over and above what specific individuals in those communities may already receive.

In economic terms, one key question is whether there are regional externalities in the process of local economic development that are important enough that we should target entire communities. I don't think we have a full answer yet.

Pat Kline and I have studied the largest place-based policy ever attempted in the history of the United States: the Tennessee Valley Authority. The TVA is an example of a "big push" policy designed to lift the economy of an entire region, a region that at the time was one of the poorest and least-developed in the country. The TVA started under FDR in the 1930s and continued through the 1950s. It used federal funds to bring roads, electricity, and public investment to an area that didn't have any. We find a good economic return on that investment. We conclude that FDR's idea of jump-starting economic development in such an underdeveloped region with a coordinated big push was a success.

However, I would not expect that adopting the same policy in the economically distressed areas of today — the Rust Belt, for example — would have the same effect because we're starting from a much different level of economic development. Building new roads or new power plants might have worked for the Tennessee Valley in the 1930s since it did not have any, but it will not necessarily help the economically weak regions of the country today.

Today, the question of how to jump-start economic development in regions that are struggling has a much less obvious answer than it did when FDR was thinking about the Tennessee Valley in 1930. It is not easy for the federal or state governments to engineer successful industry clusters in areas that don't have one.

EF: In research with Chang-Tai Hsieh at the University of Chicago, you found that regulations of the housing supply in high-productivity cities reduced U.S. economic growth by more than a third from 1964 to 2009. How could local regulations in a small number of cities have such an enormous effect on the economy?

Moretti: The reason relates to what we were discussing earlier. Labor productivity is vastly different across U.S. cities: Some cities have very high productivity, while others have very low productivity. The same worker can be more productive or less productive depending on her location.

What has been happening in the United States over the past 30 years is that the cities that have high labor productivity have also adopted increasingly restrictive land-use regulations that limit the amount of new housing that can be built. One extreme example is the Bay Area, where labor productivity and wages are among the highest in the nation. Many workers would like to move here to access those high wages generated by the high labor productivity. But most cities in the Bay Area have decided to severely constrain the amount of new housing that gets built.

I'm not talking about limits to developing parks, hills, or green fields, which should be preserved. I'm talking about limits to housing that could be built on empty parking lots near downtown San Francisco, near train stations in Silicon Valley, or in underutilized industrial space in the urban core of the region. It is a political decision that local voters have adopted. Its ultimate effect is to severely constrain the number of outside workers who can have access to high-paying jobs in the region. These cities have essentially built a wall around their borders that makes it very hard for outside workers to access the region's high productivity.

In the paper, we estimate that the costs that these land-use restrictions have imposed on the rest of the nation in terms of forgone GDP, employment, and earnings are high. We find that more flexible housing policies in high-productivity areas would have large benefits for the U.S. economy as a whole.

EF: You've analyzed the importance of word of mouth in driving the success of movies. What drew you to that question and what did you find out?

Moretti: Part of my research agenda has to do with social interaction and the role that social interaction plays in economic outcomes. We have been discussing forms of social interaction that determine the economic success of local communities.

Another form is represented by social interactions that determine the success of specific products. What drew me to that specific research question was the fact that a movie is a type of product known as an experience good: You don't know its quality in advance. You have some expectation about its quality, but its true quality is revealed only after you have consumed it. Thus, social interactions are potentially important. Experience goods are quite common.

In my research, I looked at surprise successes — movies that the public liked more than the market expected. I tracked the effect of those positive and negative surprises on future sales. And I found that for this type of experience good, social interaction can play a major role in determining which product succeeds or fails.

Movies that are ex ante almost identical but differ slightly in terms of how much the public ends up liking them can have vastly different sales thanks to social interaction, which magnify the small initial difference. It's not unlike the story about the divergence of cities, if you think about it. **EF**

A Capital Compromise

How war debts, states' rights, and a dinner table bargain created Washington, D.C.

BY JESSIE ROMERO

By the summer of 1783, soldiers in the Continental Army were fed up. The British army had surrendered at Yorktown, Va., two years earlier, effectively ending the Revolutionary War, but soldiers remained on duty while treaty negotiations dragged on in Paris. They hadn't been paid in full for their service in years, and when the Continental Congress passed legislation furloughing them, they suspected they never would be. On June 21, around 400 angry members of the Pennsylvania militia surrounded the building in Philadelphia where the Congress met, scaring off so many delegates that legislators failed to achieve a quorum. Alexander Hamilton and other congressional leaders urged Pennsylvania's government to send in friendlier troops for protection, but the state refused. The next day, the Congress announced it was abandoning Philadelphia in favor of Princeton, N.J.

Over the next few years, legislators would meet in Annapolis, Md., Trenton, N.J., and New York City. In 1788, the Constitution gave Congress the power to establish a permanent home for the federal government, but there was considerable disagreement among the states' delegates about where that home should be. Eventually, the debate would become entangled with arguments about the nation's finances, reflecting deep philosophical divides between the country's founders. The compromise that was eventually reached in 1790, which created a new district on the banks of the Potomac River, had long-lasting political and economic repercussions for the region and for the country.

"Not Worth a Continental"

When the Revolutionary War began in 1775, the American rebels weren't lacking in courage, but they were lacking in currency. The Second Continental Congress didn't have any authority to raise revenue to fund the army. "Not then organised as a nation, or known as a people upon the earth — we had no preparation — Money, the nerve of War, was wanting," George Washington wrote in an early (and eventually discarded) draft of his first inaugural address.

The Congress formalized its own existence with the Articles of Confederation in 1777, but its power was limited to requesting supplies and money from the states — requests the states failed to fulfill. "The individual States, knowing there existed no power of coertion [sic], treated with neglect, whenever it suited their convenience or caprice, the most salutary measures of the most indispensable requisitions of Congress," according to Washington.

So the Congress financed the war by printing money: up to $240 million in face value, the equivalent of nearly $6 billion today. The fledgling government also took loans from France, Spain, and private Dutch investors and issued scores of "loan office certificates," which were basically IOUs to merchants and citizens who provided goods to the army. The individual states also printed their own currency — Pennsylvania had 250 different forms of notes — and issued various bills of credit and bonds. These were specified in a confusing array of currencies and commodities. One Massachusetts debt issue promised to repay bondholders "according as five bushels of corn, sixty-eight pounds and four-seventh parts of a pound of beef, ten pounds of sheeps wool, and sixteen pounds of sole leather shall then cost."

Within a few years, Continental notes were worth pennies on the dollar. Store owners used them as wallpaper and the phrase "not worth a Continental" entered the American idiom. Eventually, the Congress couldn't pay its soldiers or the interest on the national debt. When the war ended, the Congress didn't even have enough specie to buy paper on which it could print certificates promising to pay soldiers in the future.

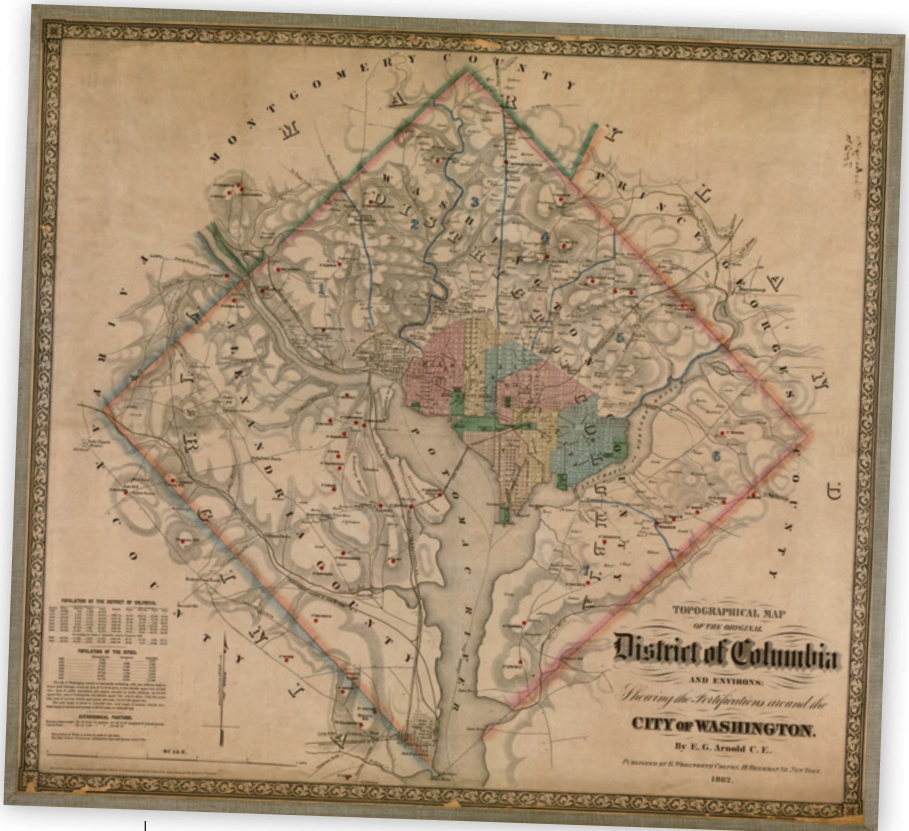
The Federalist Plan

In the late 1780s, the new country's finances were in disarray. Without a functioning currency, the government of Virginia started accepting deer skins — "well dressed for the purposes of making breeches" — as payment for debts. A former general in the Revolution wrote that "money is now no more a currency than the ragged remains of a kite."

One of the framers' goals in drafting the Constitution, which was ratified by a majority of the states in 1788, was to address many financial woes by creating a stronger federal government with the authority to tax and regulate commerce. But the matter of the Revolutionary War debt remained; in 1790, the outstanding state and federal debt totaled at least $70 million, or nearly $2 billion in today's dollars. One proposal to deal with the debt was to pay out the face value to the original debtholders who had held onto their notes but pay only the depreciated market value to those who bought on the resale market. Initially, the debt was owned largely by soldiers, store owners, and farmers. But in later years, it was bought up by speculators, primarily from the North, for far less than the original value. According to research by historian Cathy Matson of the University of Delaware, just 47 Northerners, primarily from New York and New Jersey, owned 40 percent of South Carolina's, North Carolina's, and Virginia's combined debts. These new debtholders stood to gain a substantial windfall if the debts were repaid in full.

The new treasury secretary, Alexander Hamilton, later of Broadway fame, disagreed with this proposal. In January 1790, he submitted the "First Report on Public Credit" to Congress, in which he described the nation's debt as "the price of liberty." The arguments for repaying it in full, without discriminating among debtholders, "rest[ed] on the immutable principles of moral obligation."

Hamilton made a more practical argument for repayment as well. In countries where the national debt was properly funded and "an object of established confidence," transfers of public debt could function as money and create a larger stock of capital to fund trade, agriculture, and commerce. Repaying the debt and establishing sound public credit would also, in Hamilton's view, solidify the union of the states and increase America's standing with the rest of the world.



Topographical map of the original borders of the District of Columbia.

IMAGE: LIBRARY OF CONGRESS, GEOGRAPHY AND MAP DIVISION

To establish this credit, Hamilton, a staunch Federalist, recommended that the federal government assume and consolidate all the outstanding debt and then pass an excise tax to generate the revenues to pay it off. To many people, including fellow Founding Father James Madison, Hamilton's plan seemed like a ploy to increase the central government's power. "Madison was a leading Federalist in creating the Constitution. But he never envisioned a system as centralized as the one Hamilton began trying to create," says Denver Brunsman, a historian at George Washington University. "Hamilton seemed to be proposing a system that matched the one America had just fought against."

Madison and other supporters of stronger states' rights also objected to Hamilton's plan because some states, including Maryland and Madison's home state of Virginia, had already paid off substantial portions of their war debts. Subjecting them to a federal tax would mean they were subsidizing other states' debts. Finally, they hated the idea of Northern speculators profiting at the expense of Southern farmers and merchants. The House rejected Hamilton's plan in April of 1790.

The Compromise

At the same time Congress was debating debt assumption, it was also trying to decide where to establish the nation's capital. Article I of the Constitution gave Congress the authority to establish a district as the seat of the U.S. government. This district would not be part of a state; instead, Congress would have the power to "exercise exclusive Legislation in all Cases whatsoever." The lack of statehood was an "indispensable necessity," according to the framers, in order to prevent state officials from being able to interrupt or influence the federal government's proceedings.

At least 16 different locations had been proposed, the majority of them in the North. Many Southerners feared that a Northern capital would diminish the South's influence, and Madison and other Southern representatives advocated locating the capital in Virginia, on the banks of the Potomac River. But by the spring of 1790, it appeared likely that a geographically central location such as Philadelphia would win the day.

Writing in 1792, Thomas Jefferson, then the secretary of state, recalled running into Hamilton in New York in June of 1790, just a few months after the House rejected his plan. To Jefferson, Hamilton appeared "somber, haggard, and dejected beyond description," so Jefferson invited him and Madison to his home the next day for a "friendly discussion" of their differences. Over dinner on June 20, Madison agreed to stop opposing the debt assumption plan, and even to round up votes in favor of it, if Hamilton would help him deliver the capital to Virginia. "It was observed ... that as the pill [of debt assumption] would be a bitter one to the Southern states, something should be done to soothe them," Jefferson wrote. "The removal of the seat of government to the Potomac was a just measure, and would probably be a popular one with them." On July 16, Congress passed the Residence Act, which created "a district of territory, not exceeding ten miles square, to be located as hereafter directed on the river Potomac." A few weeks after that, Congress approved Hamilton's Funding Act.

Jefferson would come to oppose debt assumption — and Hamilton himself. When the compromise was reached, he had recently returned from several years in France and was unfamiliar with the domestic debates. "Jefferson wanted to play the role of diplomat and mediator and thought that helping resolve Hamilton's and Madison's dispute would bring the country together," says Brunsman. "But he would come to believe that he had been duped by Hamilton and that the compromise was his greatest political mistake." Jefferson concluded his recollection of the dinner with the following observation: "[Debt assumption] was unjust, in itself oppressive to the states, and was acquiesced in merely from a fear of disunion, while our government was still in its most infant state. It enabled Hamilton so to strengthen himself by corrupt services to many that he could afterwards carry his bank scheme and every measure he proposed in defiance of all opposition."

Cutting the Diamond

The selection of the new capital's precise location was left to President Washington, who selected a site centered on the Maryland shore of the Potomac, extending in a diamond shape nearly to Mount Vernon. (See map.) The first boundary stone was laid in 1791, and Congress convened in the District of Columbia for the first time in November 1800. (Philadelphia served as the temporary capital while D.C. was being built.) Washington remained intimately involved in the district's planning and construction, but he never had the opportunity to govern from the new capital; he left office in 1797 and died two years later. The first president to take the oath of office in Washington, D.C., was Jefferson.

Controversy continued even after the seat of government was officially established. Within just a few years, the residents of Alexandria, Va., began trying to reverse their inclusion in the capital district because they were angry about losing their Virginia state citizenship and their right to vote in congressional and presidential elections. In addition, an amendment to the Residence Act stated that public buildings could be built only on the Maryland side, which meant few of the commercial benefits of having the capital would accrue to Virginia. Abolitionists took up the cause of removing Alexandria from the capital because it was a hub for the slave trade. In 1846, President James Polk signed legislation retroceding — returning — the area to Virginia, lopping off the southwest corner of the diamond.

George Washington envisioned Washington, D.C., as a cultural and financial center, but "it was basically a backwater for decades," says Brunsman. "I think of it as Jefferson's revenge. He took office in 1801, and he ensured that the city would be the seat of government and not much else." It didn't help that much of the city was burned to the ground during the War of 1812.

D.C. is far from a backwater today. Fueled by post-World War II increases in federal spending, the broader metropolitan area, which includes suburban Maryland and Virginia, has grown into the sixth most populous in the country. Median household income in the city is more than $82,000, compared with about $60,000 for the nation as a whole, according to the Census Bureau's most recent estimates. In the surrounding counties, household incomes are well above $100,000. The wealth isn't equally distributed, however. Median income for black households in the city is about $42,000; for whites, it's more than $134,000. And between 2000 and 2013, more than 20,000 black residents were displaced from formerly low-income neighborhoods, according to a study by the National Community Reinvestment Coalition.

While D.C. has prospered, its residents have advocated to undo the conditions of its founding. Since 1801, dozens of constitutional amendments and other bills have been proposed to give the city official representation. The 23rd amendment in 1961 gave D.C. presidential electors in the Electoral College. In 2000, the city started stamping "taxation without representation" on its license plates to protest its lack of full representation in Congress, and in 2016, nearly 80 percent of D.C. residents voted in favor of a referendum for statehood. The House voted in favor of D.C. statehood in March 2019, but there's little chance of a dinner table compromise to bring the bill to the Senate. **EF**

Readings

Ferguson, E. James. *The Power of the Purse: A History of American Public Finance, 1776-1790*. Chapel Hill, N.C.: University of North Carolina Press, 1961.

Matson, Cathy. "The Revolution, the Constitution, and the New Nation." In Stanley L. Engerman and Robert E. Gallman (eds), *The Cambridge Economic History of the United States, Vol. 1: The Colonial Era.* Cambridge: Cambridge University Press, 1996.

The ***Richmond Fed Research Digest*** summarizes externally published work of the Bank's research department economists. Full citations and links to the original work are also included.

2019

Richmond Fed Research Digest

Summaries of work by economists in the Bank's Research Department published externally from June 1, 2018, through May 31, 2019

Welcome to the eighth annual issue of the *Richmond Fed Research Digest*. The Federal Reserve Bank of Richmond produces several publications that feature the work of economists in its Research Department, but those economists also publish extensively in other venues. The *Richmond Fed Research Digest*, a midyear annual, brings this externally published research together in one place with brief summaries, full citations, and links to the original work. (Please note that access to articles may require registration or payment.) So bookmark this spot on the Richmond Fed website and mark your calendar for June 30, 2020, when the Bank will publish the next issue of the *Richmond Fed Research Digest*.

Underlining indicates links to bios of Richmond Fed economists.

The Persistence of Financial Distress

By Kartik Athreya, José Mustre-del-Río, and Juan M. Sánchez
Review of Financial Studies, *forthcoming*

What are the empirics of household financial distress in the United States, and to what extent can we understand them as arising from the choices of optimizing consumers who face uninsurable risks? In an article forthcoming in the *Review of Financial Studies*, Kartik Athreya of the Richmond Fed, José Mustre-del-Río of the Kansas City Fed, and Juan M. Sánchez of the St. Louis Fed attempt to answer these two questions. They address the first question using account-level Federal Reserve Bank of New York Consumer Credit Panel/Equifax data. They address the second question by estimating a battery of state-of-the-art quantitative models of defaultable consumer debt over the life cycle.

The term "financial distress" can be defined in a variety of ways. Primarily, the authors consider people to be in financial distress in a given year if, during that year, at least one of their credit relationships (accounts) is at least 120 days past due — that is, severely delinquent. Because severe delinquency is an expensive way to repeatedly roll over debt, this definition plausibly captures financial distress.

The persistence of financial distress is important to measure and understand because it provides essential guidance to the appropriate interpretation of the risks facing households over a lifetime. For example, if financial distress is highly transitory, a given incidence for it over the life cycle would suggest that most or all households face similar risks over their lives, with each episode of financial distress not lasting very long. If, on the other hand, financial distress is highly persistent, the same incidence would be disproportionately accounted for by a much smaller number of borrowers who repeatedly, or in a sustained fashion, experience distress. The latter scenario is what the authors find in the data. They establish that 35 percent of U.S. consumers experience financial distress (severe delinquency) at some point during their lives. However, less than 10 percent of

Richmond Fed Research Digest 2019

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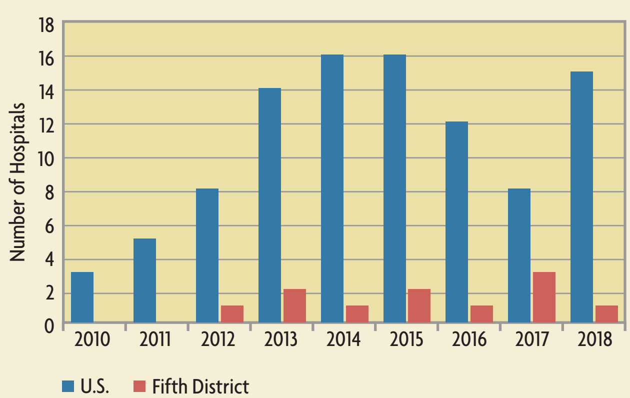
Rural Hospital Closures and the Fifth District

BY EMILY WAVERING CORCORAN AND SONYA RAVINDRANATH WADDELL

Since 2010, some 106 hospitals in American rural areas closed their doors. The closures took place at a time when population and employment growth is more skewed than ever toward our biggest cities, when finding access to health care in more isolated areas is as difficult as it has ever been, and when the loss of an anchor institution, such as a hospital, can have devastating effects on the community and economic development of rural households. Why do we see hospitals in rural areas closing at a higher rate than at any time since the mid-1980s? What are the economics that hospitals in rural areas are facing? And what may be the consequences of the loss of these anchor institutions for communities?

The share of rural hospitals that have closed exceeds that of hospitals in urban areas, and rural hospital closures have accelerated. (See chart.) Of the 106 hospitals that closed, two-thirds were in the South — as defined by the census regions West South Central, East South Central, and South Atlantic — and of these, 12 were in the Fifth Federal Reserve District. ("Closing" here means ceasing to provide general, short-term, acute inpatient care.) According to a Government Accountability Office (GAO) report, rural hospitals in the southern United States represented 38 percent of rural hospitals in 2013 but 77 percent of the closures from 2013 through 2017. In the Fifth District, although North Carolina, South Carolina, and Virginia had the highest number of hospital closures, an analysis by David Mosley and Daniel DeBehnke of Navigant used variables such as total operating margin, days of cash on hand, and debt-to-capitalization ratio to determine that West Virginia had the highest number and share of rural hospitals at high financial risk of closure.

Rural Hospital Closures



NOTE: No rural hospitals in the Fifth District closed in 2010 or 2011.
SOURCE: Cecil G. Sheps Center for Health Services Research and authors' analysis

Of course, hospital mergers and acquisitions can also affect local options for medical care. These, too, have been more prevalent in rural areas than in urban areas. Approximately 12 percent of rural hospitals nationwide (326 hospitals) merged from 2005 through 2016. Some of the dynamics, primarily financial pressures, that lead to rural hospital closures are the same as those that lead to mergers or acquisitions.

Why Are Rural Hospitals Closing?

The primary drivers of rural hospital closures are, in fact, economic. The length of hospital stays has decreased across the country; in rural areas, that loss of inpatient services is only compounded by the rural population loss over time. (See chart.) According to a congressional report in 2018, the occupancy rate of urban hospitals was 66 percent compared with 40 percent for all rural hospitals and 31 percent for rural hospitals with fewer than 50 beds. Rural hospitals also have tighter profit margins than urban hospitals. For example, while urban hospitals had a median profit margin of 5.5 percent in 2016, rural Critical Access Hospitals (CAHs) and other rural hospitals had median profit margins of 2.6 percent and 2.0 percent, respectively. The reduced inpatient services result from not only an effort to reduce health care costs, but also from medical advances that allow for more procedures to be performed as outpatient services, which reduces or eliminates the need for patients to receive hospital care.

Another part of the story lies in both long-standing and more recent economic developments. In the past few decades, as local mining, manufacturing, and agricultural employers have left rural areas, the loss of employer health coverage has contributed to the financial challenges of rural hospitals. Some demographic trends, such as an increasingly older population in rural areas, have made inpatient services more in demand, but others, such as a declining population overall, have made it more challenging for rural hospitals to operate profitably. The GAO found that rural hospitals have also faced increased competition from federally qualified rural health centers and urban hospitals. These competitors provide services that rural residents had previously sought at their local hospital, such as emergency care and behavioral health care. Sometimes, rural patients will bypass their local rural hospital for larger rural or urban facilities even when services are available locally. One study found no effect of hospital closures for Medicare patients and found that hospital closings were associated with reduced readmission rates, which is regarded as a sign of increased quality.

Health care policy matters, too. The last string of rural hospital closures occurred in the 1980s after Congress mandated the use of fixed, predetermined reimbursement rates for hospitals through the prospective payment system (PPS). In response, then, to growing concerns over rural health care access, the Centers for Medicare & Medicaid Services implemented the Rural Hospital Flexibility Program of 1997 (commonly called the "Flex Program"), which authorized payment of inpatient and outpatient services on a "reasonable cost basis" for hospitals designated as CAHs. According to an issue brief from the Kaiser Family Foundation in 2016, more than half of rural hospitals were CAHs, about 13 percent were designated as Sole Community Hospitals (SCHs), 8 percent were Medicare-Dependent Hospitals (MDHs), and another 11 percent were Rural Referral Centers. All of these designations provide enhanced or supplemental reimbursement under Medicare.

Federal law requires that hospitals treat patients regardless of their ability to pay, which means all hospitals have some amount of uncompensated care. In 2017, hospitals nationwide provided approximately $38.4 billion in uncompensated care. Hospitals with high levels of uncompensated care, formally known as Disproportionate-Share Hospitals (DSHs), receive federal financial assistance, although it only covers approximately 65 percent of total uncompensated costs. The 2010 Patient Protection and Affordable Care Act (ACA) was intended to reduce the federal government's financial assistance to DSHs on the assumption that more uninsured patients would have their services covered by Medicaid soon after the passage of the ACA. But as of mid-2019, 14 states have not expanded Medicaid (including North and South Carolina in the Fifth District). States that expanded Medicaid to low-income adults under the ACA saw both larger coverage gains and larger drops in uncompensated care — a 47 percent drop in uncompensated care costs on average compared to an 11 percent decrease in states that did not expand Medicaid. A 2018 article in the journal *Health Affairs* found, in fact, that the ACA's Medicaid expansion was associated with better hospital financial performance and notably lower likelihoods of closing, especially in rural markets and counties that had large numbers of uninsured adults before Medicaid expansion. Almost 75 percent of the rural hospitals that closed from 2010 through mid-2019 were in states that did not expand Medicaid.

A Negative Spiral

The CAHs that closed from 2010 through 2014 generally had lower levels of profitability, liquidity, equity, patient volume, and staffing. Other rural hospitals that closed had smaller market shares and operated in markets with smaller populations. No doubt delayed and forgone Medicaid expansion — and higher rates of Medicare coverage due to an aging population — exacerbated the financial strain facing rural hospitals that were already struggling with declining population, higher poverty, and relatively more uninsured.

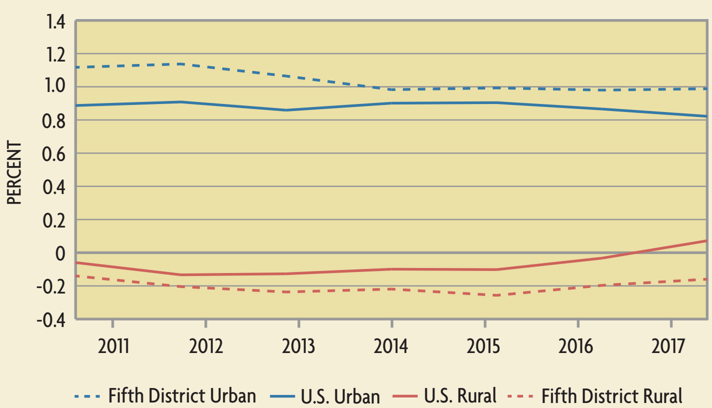
Marc Malloy, a senior vice president with the hospital and medical facilities chain HCA Healthcare, notes that these economic disadvantages of rural hospitals can lead to a negative spiral. "Smaller hospitals are significantly disadvantaged when competing for resources, negotiating with commercial payers, and attracting top talent — both clinical and managerial," he says. "As finances get tighter, it becomes difficult to attract doctors in high-margin businesses like orthopedics, vascular surgery, pediatrics, or maternal care. The tough finances leave the board of directors with the dire choices to sell a failing hospital or reduce services until the organization has atrophied to the point of closure."

What's "Rural"?

In this article, except where otherwise noted, "rural" is defined using the Federal Office of Rural Health Policy's (FORHP) definition, which includes any of three areas: (1) a county outside of a metropolitan area; (2) a county in a metropolitan area but with a rural-urban commuting area code of 4 or higher; or (3) one of the 132 large and sparsely populated census tracts with a rural-urban commuting area code of 2 or 3 — these tracts are at least 400 square miles in an area with a population density of no more than 35 people per square mile. In this way, FORHP attempts to classify "rural" in a way that accounts for distance to services and sparse population. (For more information on ways to classify urban and rural areas, see "Definitions Matter: The Rural-Urban Dichotomy," *Econ Focus*, Third Quarter 2018.)

Source: https://www.hrsa.gov/rural-health/about-us/definition/index.html

Urban vs. Rural Population Growth



SOURCE: Population statistics are from Census Bureau. Urban/rural definitions are from the USDA RUCC codes, where urban is defined as codes 1-3 and rural as codes 4-9. For more information, see "Definitions Matter: The Rural-Urban Dichotomy," *Econ Focus*, Third Quarter 2018.

The challenges of staffing rural hospitals are found across states. Glenn Wilson, chairman and CEO of Chesapeake Bank and Trust in Maryland, who is also on the University of Maryland Medical System Shore Regional Health Board, says it is challenging to attract physicians who might see half the number of patients in a rural area than they would in an urban area and to retain nurses whose hours will vary unexpectedly from day to day based on the number of patients on any given day. "State health care regulators are not adequately recognizing that in a more rural setting, the costs of providing health care will be higher. We can't scale down but so far."

What Happens to Access to Health Care?

The most common immediate effect of any rural hospital closure is lost access to health care. According to the Cecil G. Sheps Center for Health Services Research at the University of North Carolina, the 106 rural hospitals that closed from January 2010 through January 2019 represented a loss of 3,984 hospital beds in rural areas. For the closures that occurred from 2013-2017, over half were at least 20 miles from the nearest hospital, indicating that hospital closures might even hurt access to emergency services. Although hospitals' inpatient volumes continue to decline, the use of emergency services, especially at the CAHs, has not declined, corroborating that rural communities need local emergency access.

There are other services that go away when the local hospital closes. Closure of obstetrics units or reduction of maternity services in rural areas prolongs travel time for rural women, which is associated with higher costs, greater risk of complications, longer lengths of stays, and psychological stress for patients. Research has indicated that the loss of hospital-based obstetric care in rural counties not adjacent to urban areas was significantly associated with increases in births in hospitals lacking obstetrics units and increases in preterm births. Access to mental health care and treatment for substance abuse disorders is also more likely to be in short supply once rural hospitals are closed.

Cutbacks in services in rural facilities may be driven in part by potential quality issues arising from low volume. "Research indicates that volume and quality outcomes are positively correlated," says Malloy. Speaking of his experience at Mission Health in Asheville, N.C., sold to HCA in February 2019, he recalls, "At Mission, we closed labor and delivery services at two of our outlying hospitals because the volumes were so low. We felt that to ensure the highest quality and best outcomes, it was better to move those services to a facility that had the volume to ensure sufficient staffing, skills, and experience."

Critical Access Hospitals

"Critical Access Hospital" is a designation given to certain rural hospitals by the Centers for Medicare and Medicaid Services with the intention of reducing the financial vulnerability of those hospitals and keeping essential medical services (and thus access to health care) in rural communities. There are conditions that a hospital has to meet to obtain CAH status (for example, it has to be more than 35 miles from another hospital and provide 24/7 emergency services) and the benefits of CAH status (for example, cost-based reimbursement for Medicare services).

What About Jobs?

In many rural communities, a hospital can be a primary source of jobs — often skilled, higher-paying jobs. When a hospital goes away, then, so do those jobs (although in many cases, hospitals do convert to other facilities, providing more limited, or just different, services). According to a 2017 article by Anne Mandich and Jeffrey Dorfman of the University of Georgia, a short-term general hospital is associated, on average, with 559 jobs in its county, 60 of which are hospital based and 499 of which are not health care related. In addition, hospital employees with an associate's degree have a 21.4 percent wage premium when compared to other opportunities, and those with a bachelor's degree can earn 12.2 percent more. A 2006 article in the journal *Health Services Research* reported that the closure of a community's only hospital reduces per capita income by 4 percent and increases the unemployment rate by 1.6 percentage points. They also found that there was no long-term economic impact from closures in communities with alternative sources of hospital care, although overall income in the area decreased for two years after the closure.

An article published in 2015 tried to estimate the economic impact of a hospital closure on a rural area and used as a case study Bamberg County Memorial Hospital in South Carolina, which closed in 2012. When it closed, the hospital employed 102 people and created over $3 million in direct labor income. (Ten of the displaced workers were rehired when the medical center in adjoining Orangeburg County opened a new urgent care center.) The case study found that, not surprisingly, in the two years after the closure, Bamberg County had a larger decrease in population and employment than contiguous counties.

The Anchor Institution

The case study on Bamberg County documented not only changes in access to care and transport times to health care, but also social effects of the closure. According to the article, Bamberg County Memorial, as an anchor institution in the area, had been a social hub for the community and gave many young people their first work experience (and many older residents, their last).

In addition to lost employment for an area, a hospital closing leads to the exodus of medical professionals, such as doctors and nurses. Not only does this reduce overall employment and shrink the pool of higher wage earners, thus reducing the purchasing power of a community, but the departure of the medical professionals also means the loss of individuals who may act as role models, mentors, volunteers, and patrons within the community. This loss, while difficult to quantify, should not be discounted.

Moreover, communities that wish to attract businesses must have a compelling portfolio of value that includes high-quality health care. This could apply to retirement communities that might locate within a certain number of miles of a hospital or even to colleges if parents are concerned about proximity to health care in the event of an emergency. Some employers have mentioned taking a region's health care facilities into account when considering where to locate a plant or an office, and all employers mention the presence of a qualified, healthy workforce as key to site location decisions.

What's Next?

The high rate of rural hospital closures is not expected to slow anytime soon — instead, some analysis suggests that they may close at an even higher rate in coming years. Some 430 hospitals across 43 states are at a high financial risk of closing based on an assessment of their current financial viability. Together, these hospitals are major economic contributors to their communities, representing 21,547 staffed beds, 150,000 jobs, and $21.2 billion total patient revenue. And almost two-thirds of these hospitals are essential to the surrounding community, meaning they provide critical trauma care, serve vulnerable populations, are located in geographically isolated areas, or have a substantial economic impact on the local community.

Within the Fifth District, 21 rural hospitals in North Carolina, South Carolina, Virginia, and West Virginia face a high financial risk of closing. This represents nearly one in five rural hospitals in those states. Of additional concern is the fact that 14 of the rural hospitals at high risk of closing in North Carolina, South Carolina, and West Virginia are considered essential to their communities. West Virginia has the highest number of essential rural hospitals at high financial risk of closing, as eight of the state's 10 at-risk hospitals are considered essential to their communities.

Every now and again, a hospital will reopen, such as Crockett Medical Center in Texas. Through a tax increase and reduced services (for example, it is operating a primary care clinic and an emergency room but not an obstetrics unit), the hospital managed to resume some operations and provide its resident access to at least some care. There might be other models that could provide rural residents with emergency care. For example, some communities might be able to cease providing inpatient services but still generate enough outpatient revenue to maintain an emergency department. One report found that although half of hospitals that closed from 2010 through 2014 ceased providing health services altogether, the rest have since converted to an alternative health care delivery model. Some options include independent clinics, hospital-owned primary care practices, provider-based and independent rural health clinics, urgent care clinics, off-campus emergency departments, clinic and ambulance services, rural emergency hospitals, and 12-hour primary health centers.

The way forward will inevitably vary by state. Maryland, for example, is the only state in the country that is exempt from the Medicare hospital reimbursement rules and thus any federal pressure to focus on rural health will not affect Maryland. Virginia has seen far fewer rural hospital closures in part because the state has many multi-hospital health systems; according to Sean Connaughton, president and CEO of the Virginia Hospital and Healthcare Association, "It is the small, stand-alone hospitals that are the hardest to keep open." Given the negative operating margins of most small rural hospitals, it seems likely that the mergers, acquisitions, or closures of rural hospitals are likely to continue. But Connaughton also sees partnership opportunities across rural health care that could enable a hub-and-spoke network of providers that sustainably provide training and health care. One example from Virginia is in the Roanoke Valley region, where Carilion Clinic is working with partners like Virginia Tech on medical education and Radford University on nursing education while engaging its network of rural hospitals to refer patients needing specialty care to larger hospitals such as Roanoke Memorial Hospital.

Conclusion

Sometimes, an acquisition can provide a health care system with its best hope of survival. Says Malloy of the sale of Mission Health to HCA in 2019, "The arrangement with HCA paints a far brighter future than we would have had otherwise." This is less likely to be true of a hospital closing, however, even if a closure is unavoidable and even if there are viable alternatives to health care within a short distance. Closing any anchor institution has the potential to affect a community heavily in terms of care, jobs, and the presence of potential role models and pillars of the community. It is important, then, for policymakers and leaders at all levels of government to help consider the best ways to help that community move forward. **EF**

Opinion

Whom Will Opportunity Zones Help?

BY KARTIK ATHREYA

Many people don't know that Federal Reserve Banks have programs to aid the development of low-income areas, a responsibility we have had in one form or another for close to 40 years. Here at the Richmond Fed, our Community Development group became part of the Research Department last year. This transition has greatly increased my own exposure, and that of my economist colleagues, to community development issues — and at the same time, I've been excited about bringing the best economic thinking into helping these areas.

Probably the largest-scale community development program in recent years is one buried within the 2017 tax reform law: opportunity zones. As detailed in Jessie Romero's story in this issue, the program authorized state governors to select areas where investments would receive major tax advantages, thus attracting capital to those areas. (See "Opportunity Zones: More Money, More Problems?" p. 10.) It's an example of what economists call "place-based" programs — that is, programs aimed at helping improve places as opposed to directly helping individuals or families. The idea, of course, is that helping poor places will ultimately benefit individuals, perhaps by jump-starting local job growth, even if some of the beneficiaries aren't the intended ones.

The justification for place-based policies is at its strongest when there are high barriers to geographic mobility — when it is difficult, in other words, for people to move from distressed areas to ones with more job opportunities. Such barriers could arise from declining opportunities for low-skilled workers, or for workers with specific skills, across a region or across the country. Other potential barriers to mobility include local policies that tightly restrict the housing supply and drive up rents and house prices in areas where jobs are plentiful — especially in our largest cities. Moreover, places are often more than just places: They are communities with relationships and other "connective tissue" that bind us to one another.

For these reasons, helping the places where people already are is intuitively appealing. Yet it is hard to draw conclusions about how well place-based policies work in terms of job creation. The effects of a program that targets individuals with training, cash transfers, or some other benefit is, comparatively speaking, easier to assess. When the "treatment," in the terminology of the social sciences, is applied indirectly to a census tract, a city, or a region, making inferences about the effects of the program becomes a truly fraught exercise.

With regard to opportunity zones in particular, the work ahead is to more precisely understand how much they are likely to improve the lives of the least advantaged. The program's critical decisionmaking stage, the selection of the zones, was not required to be based on objective measures of economic distress, such as unemployment or poverty rates. Some 57 percent of neighborhoods in the United States were eligible, and it was left to the subjective judgments of state officials to choose among them. No doubt these decisions were made with good and sincere intentions, but public officials are human and it would be only natural for them to be influenced by considerations relevant to their constituencies.

Indeed, research by Hilary Gelfond and Adam Looney of the Brookings Institution found that states varied greatly in the extent to which they zeroed in on the most distressed areas. Nationally, about one-quarter of the areas selected had poverty rates below 20 percent. In a half-dozen states, they noted, areas chosen as opportunity zones "were actually better off, on average, than eligible communities that were not selected." They pointed to a county in Nevada designated as an opportunity zone despite a median household income of over $65,000 and a family poverty rate of 2.6 percent. The county is home to a number of major industrial facilities, leading the researchers to surmise that the designation was meant not to improve the fortunes of poor people, but simply to confer a tax benefit on investors.

Even in a zone that is truly distressed, moreover, there's the question of how much the poor people in that zone will benefit. Much of the gains may well flow to people who are already in good shape: to property owners or to skilled workers from outside the zone who receive jobs there. That the investments may create jobs for people from outside the zone is of course a positive effect, and may indirectly create service jobs for locals, but just how much the locals will benefit is highly uncertain.

To be sure, there is potential for significant favorable effects from the opportunity zone program. And experimentation in community development programs, within reason, is a good thing. So I hope that as we continue to engage in the development of opportunity zones, extremely diligent and detailed data collection will take place. We need to know "before and after" for a wide range of stakeholders and potential beneficiaries. Such efforts would help us think harder about how to structure place-based programs in a way that efficiently benefits the people who are intended to be helped. **EF**

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

NextIssue

Climate Change
Some economists contend that climate change will present risks to the financial system, threatening its stability. Central banks worldwide are assessing those risks — and some are adopting measures to mitigate the risks or deal with them when they arrive.

Labor's Declining Share
There is wide agreement that labor's share of U.S. national income has gone down substantially over the past 20 years. But there is much less agreement about why. Economists have advanced a wide variety of explanations, including trends in automation, outsourcing, industrial concentration, and labor's bargaining power.

Federal Reserve
It's traditionally assumed that only the Fed has the power to maintain a stable price level. But some economists have theorized that, in certain circumstances, inflation may actually be driven by fiscal policy. Would fiscal control of inflation mean that governments could issue debt to pay for new programs without worrying about inflation? Some proponents of a new idea known as Modern Monetary Theory say yes.

Economic History
From 1908 to 1940, the Sears catalog sold houses — kits that Sears would ship and that a builder or the homeowners themselves would assemble locally. Hundreds of the kits, affordable housing for the middle class, were built in the Fifth District alone. A relic of an earlier time or a source of lessons for affordable housing policy?

At the Richmond Fed
The U.S. shadow banking sector — so-called because it operates largely outside the purview of federal banking regulation — holds as much as $15 trillion in assets. Richmond Fed economist Borys Grochulski has looked at how regulators can design rules that take into account the ability of banks to shift activity between the regulated and shadow sectors.

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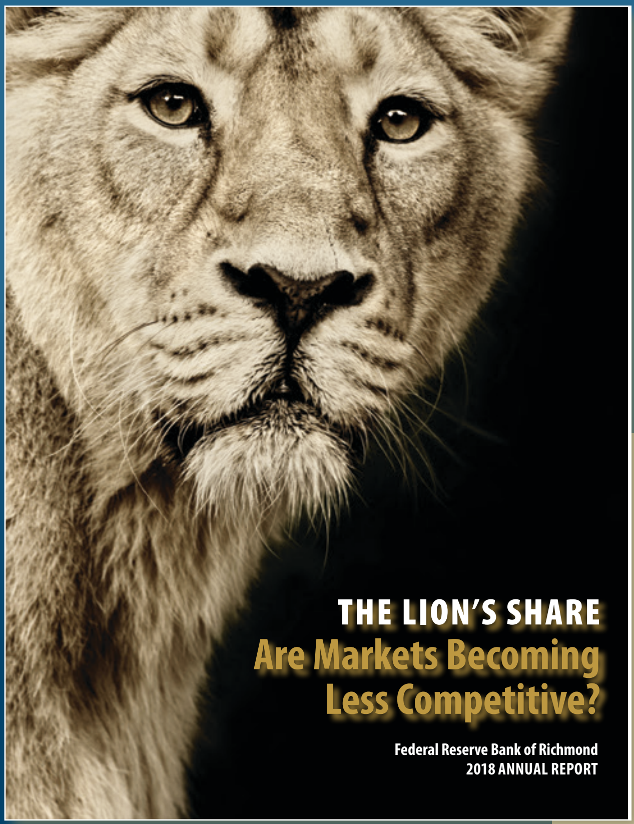

The Bank's annual report essays offer in-depth looks at important economic issues.

Market Concentration
The 2018 essay explores the question of whether increases in market concentration mean that markets are becoming less competitive.

Educational Attainment
The 2017 essay asks why the United States is not producing more college graduates.

Urban Decline
The 2016 essay provides a framework for understanding and responding to urban decline.

Annual report essays are available on the Bank's website at www.richmondfed.org/publications/research/annual_report/