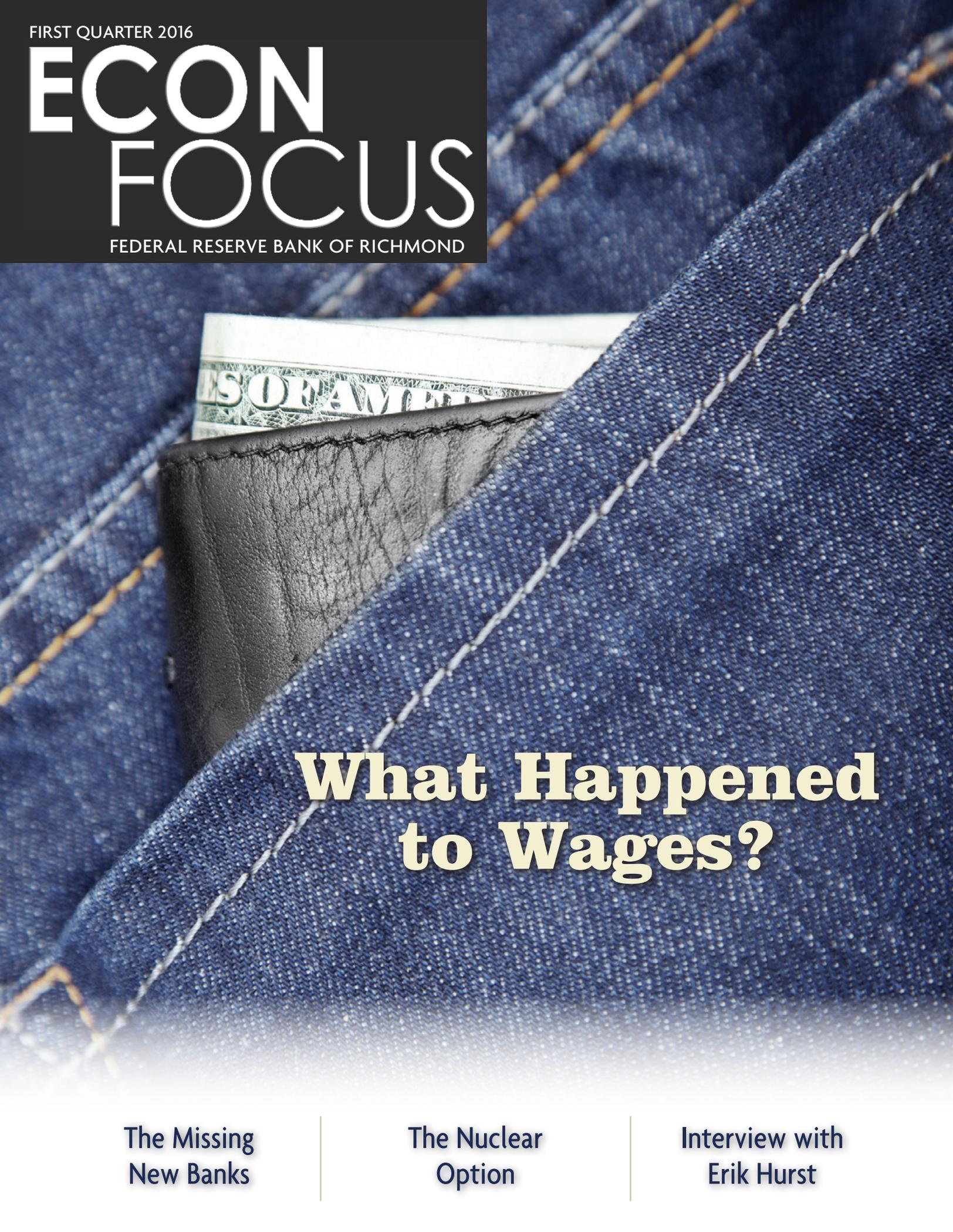


FIRST QUARTER 2016

ECON FOCUS

FEDERAL RESERVE BANK OF RICHMOND



What Happened to Wages?

The Missing
New Banks

The Nuclear
Option

Interview with
Erik Hurst

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Joining Community Development and Research

If you were to ask passers-by on the street what the Fed does, the answer would probably be “set interest rates.” Some might also note that the Fed’s regional Reserve Banks supervise many financial institutions. I would wager, however, that few are aware that Reserve Banks are also active in the community development world. It’s a role that we’ve formally had for 35 years now and one that I believe is likely to benefit in coming years from findings of economic research.

The role of community development grew out of our responsibility to implement the Community Reinvestment Act (CRA), which Congress passed in 1977 to end the practice of “redlining.” The Fed and other supervisory agencies were directed to examine how well banks met the credit needs of low- and moderate-income neighborhoods in their markets and to take that into consideration when reviewing applications for mergers, acquisitions, or new branches. Not long afterward, in 1981, the Fed’s Board of Governors directed the Reserve Banks to set up an office to assist citizens and community groups who wanted to protest a bank’s application.

As community groups became more familiar with the protest process, they needed less of that type of assistance. At the same time, banks and community groups were increasingly seeking each other out: Banks were looking for opportunities to invest in the development of disadvantaged communities, and community groups were looking for sources of investment. So the community affairs role shifted toward facilitating that process of relationship building.

Legitimate questions can be raised about the CRA as a matter of public policy. For example, it’s not obvious that the banking industry was forgoing many truly profitable loans in low- and moderate-income neighborhoods. And it may be that many of the bank investment activities that are seemingly attributable to the CRA are occurring simply because they are profitable and would have occurred even without it. In any case, one can discern in the law an implicit congressional mandate for the Fed to contribute to the effectiveness of what might be called the community development industry — the organizations and activities aimed at improving the well-being of residents of distressed communities.

How can the Fed best contribute to the effectiveness of these efforts? What sources of comparative advantage might a central bank draw on to assist the community development world? One relevant attribute is our position as a nonpartisan entity, with no vested interest in one approach or another. This allows a central bank to act as a trusted source of objective information.

More broadly, because the primary responsibility of a central bank is monetary policy, rigorous state-of-the-art economic research has to be a core competency. I believe that the insights derived from economic research can provide

a valuable complement to the work of community development practitioners.

A substantial body of research since the 1950s has focused on the determinants of the long-term growth in economic standards of living. Many of the lessons learned apply both at large scales — think countries — and at relatively small scales — think cities or even neighborhoods.

In particular, much of this research now points to a critical role for human capital: A society’s long-term economic growth depends both on people having the skills to develop new technologies and on workers learning new skills to work with those technologies. At the community level, too, the acquisition of skills by workers (perhaps combined with the migration of skilled workers into the area) is essential to economic development.

This is an area of particular interest to the Richmond Fed. In recent years, our researchers have been reviewing what economic research has to say about human capital acquisition and how that research applies to workforce development initiatives. Our Research and Community Development departments have also collaborated on focus groups with teachers and workforce development practitioners throughout our district to give us the perspective of the people who are actually on the ground.

One lesson for those interested in the well-being of residents of low- and moderate-income neighborhoods is that long-run improvement might remain difficult without finding ways of improving the residents’ job-related skills. I don’t mean to suggest that education is a cure-all; to be sure, the residents of lower-income communities face myriad barriers to opportunity. And there can be little doubt that the structure and quality of local institutions are a crucial factor in community development, consistent with research indicating that institutional quality is a potent factor explaining growth differences at the national level as well. Well-grounded research findings are key to identifying the most constructive way forward. **EF**



A handwritten signature in black ink, appearing to read "J M Lacker". The signature is fluid and cursive.

JEFFREY M. LACKER
PRESIDENT
FEDERAL RESERVE BANK OF RICHMOND



MARYLAND — In April, the Maryland Economic Development Corporation, in partnership with financial advisory firm Wye River Group and investment banking firm Bengur Bryan, launched an investment fund targeting economically depressed areas in Baltimore City and Prince George’s County. The Maryland Targeted Communities Investment Fund hopes to raise \$50 million to invest in commercial real estate, affordable housing, and retail developments in designated areas. An initial \$7.5 million investment came from the state via the Departments of Commerce and Housing and Community Development.



NORTH CAROLINA — In mid-April, the North Carolina Railroad Co. closed an \$8.5 million deal to buy 630 acres for the Greensboro Randolph Mega Site, a project aimed at offering a large plot of land to attract an expansion-minded manufacturer to the region. The railroad plans to purchase another 245 acres for \$4.5 million. With the purchase, there are now about 1,200 acres designated for the site — which supporters say is enough to attract a major employer.



SOUTH CAROLINA — On June 1, South Carolina started collecting hotel and tourist taxes from people who rent homes in the state through rental website Airbnb. The taxes collected include state sales and use taxes, local taxes, and the state accommodations tax. South Carolina joins more than 150 states and municipalities worldwide where Airbnb is voluntarily collecting taxes on behalf of hosts and guests. There are currently 4,000 active rental listings in the state, and proponents say this move will help level the playing field between these accommodations and traditional hotels and inns.



VIRGINIA — The first transoceanic cable station in the region is coming to Virginia Beach. Telefonica International Wholesale Services USA, Inc. has purchased 3.5 acres for \$735,000, on which it will build a 20,000-square-foot data center to house the cable station. The 7,000-mile fiber cable will connect Rio de Janeiro, Brazil, with San Juan, Puerto Rico, and Virginia Beach, and it is expected to improve speed and data transmission for the Hampton Roads region. It will begin operations in early 2018.



WASHINGTON, D.C. — There’s good news for mortgage lenders and real estate agents to be found in a recent report on the D.C. housing market. According to listing data analyzed by ShowingTime RBI, gains were made in home sales — the 771 sales in April 2016 represent an 8.4 percent increase compared with the same month last year and beat the five-year April average by more than 15 percent. Increases were also seen in contract activity (5.7 percent jump) and inventory (11.3 percent jump). The median home price in April, however, was \$525,000, roughly the same as in April 2015.



WEST VIRGINIA — An early April freeze severely damaged the apple and peach crops across West Virginia, wiping out entire crops in some counties. The state is the nation’s 12th-largest peach producer and ninth-largest apple producer, with annual sales valued at \$5.36 million and \$12.5 million, respectively. The lower supply of fruit could lead to higher prices for consumers this year. The West Virginia Department of Agriculture has yet to decide whether it will provide financial aid for affected farmers.

FEDERAL RESERVE

Subzero Interest

BY TIM SABLİK

In late January, Japan's central bank, the Bank of Japan, surprised markets by announcing an unusual policy. Rather than paying banks a positive rate of return on excess reserves, it would begin charging 0.1 percent. The central bank hopes that this negative interest rate will encourage banks to increase lending and thereby spur greater economic activity in a country that has suffered from weak growth for almost two decades.

While highly unorthodox, negative interest rates are not unheard of. Switzerland adopted negative rates on foreign deposits in the 1970s to counter outside pressure on its currency. And the Bank of Japan is actually the fifth central bank to dip its toes into negative territory in more recent times. (See chart.)

Negative rate policy has even been discussed in the United States, despite the fact that the Fed raised rates in December and has said it is likely to raise rates further. In February testimony, Federal Reserve Chair Janet Yellen said that negative rates weren't "off the table," though she has since told legislators in June that negative rates were not something the Fed was "actively looking at."

For the casual observer, the idea of banks charging savers for the privilege of keeping their money and paying borrowers to take on more credit seems backward. In fact, economists long assumed that it would be impossible to make nominal rates significantly negative because depositors would simply withdraw their funds into cash, an asset that always pays a nominal interest rate of zero. Given this challenge, how and why have monetary policymakers in Europe and Japan pushed rates negative?

Why Go Negative?

Why would the Fed or any central bank want to flip the borrower/lender relationship on its head with negative rates? To understand that, it's important to understand what monetary policymakers seek to accomplish by changing their nominal interest rate target.

When the Fed changes its short-term policy rate, it influences other short-term interest rates in the economy. Changes in interest rates affect the public's demand for goods and services. Lower rates make it cheaper to borrow, encouraging businesses to borrow to invest in new capital and households to take out loans for durable goods like homes and cars. Lower interest rates also tend to drive down the exchange rate of the dollar, increasing the foreign demand for U.S. goods.

But what happens when interest rates are already low, as they have been for the last eight years? If

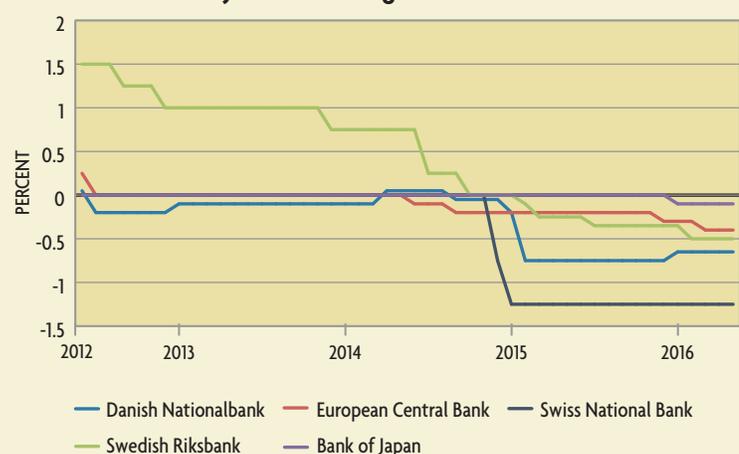
nominal interest rates can't go negative, then the Fed may be hindered in its ability to achieve the economy's natural interest rate. (For more on the natural interest rate, see "Getting Back Into Equilibrium," p. 40). It could attempt to lower long-term interest rates by purchasing long-term assets. In fact, the Fed did this during the Great Recession and recovery through the policy known as quantitative easing. The Fed could also pledge to keep rates low for an extended period, influencing long-term rates by setting expectations that low rates will extend far into the future — another tactic it has employed. These policies may have diminishing returns, however, especially if long-term rates are also near zero.

Central bankers could wait for inflation to carry nominal rates to higher positive territory, but some have suggested that it may be possible for rates to become "stuck" at zero or near zero. Normally, monetary policymakers respond to inflation below their target by lowering interest rates and vice versa when inflation is above target. But if rates are at zero and inflation is low, as has been the case in recent years, the Fed is unable to cut rates to boost inflation to target. And when inflation rises but is still below target, the Fed does not want to raise rates either.

This is where negative interest rates could play an important role. Some economists argue that freeing monetary policy from the zero constraint could enable it to push inflation back to target and get the economy back on track.

"Cutting interest rates into negative territory stimulates the economy in exactly the ways that cutting interest rates stimulates the economy in positive territory, with very few differences," says Miles Kimball, an economics professor at

Central Bank Policy Rates Go Negative



NOTES: The data start in June 2012 and end in May 2016. The Swiss National Bank line is the lower bound of that bank's target range for its policy rate.

SOURCE: Central bank websites

the University of Michigan who has advocated in favor of negative rate policy.

The main thing standing in the way is cash.

The Cash Problem

As an asset that always has a nominal return of zero percent, cash presents a sticking point for interest rates. As economist John Hicks wrote in 1937, “If the costs of holding money can be neglected, it will always be profitable to hold money rather than lend it out, if the rate of interest is not greater than zero.”

Of course, the costs of holding money are not negligible. As a result, economists have long suspected that the “zero lower bound” created by cash was not exactly zero. There would be some wiggle room because it is not entirely free to hold and transact in cash, particularly in large amounts. Cash takes up some amount of physical space and is subject to theft or damage, so there is a cost associated with secure storage. Conducting large transactions with cash is also cumbersome and involves physically transporting bills. This explains why large depositors in Europe and Japan have, so far, been willing to accept slightly negative rates. Indeed, data in 2015 did not show a dramatic uptick in demand for cash in the European countries that have adopted negative rates.

But while larger clients may be more accepting of negative rates, at least for now, most banks are concerned that smaller depositors would be less forgiving. Banks in Denmark and Sweden have been willing to pass on the benefit of negative rates to borrowers like those with home mortgages, for example, but they have been reluctant to charge negative rates to depositors. Banks are concerned that retail depositors would have a much lower tolerance for negative rates, choosing instead to withdraw cash and store it under the proverbial mattress. Also, the first bank to begin charging savers could see a flight of customers to its competitors. And there are signs that even large depositors have limited tolerance for negative rates. In March, German reinsurance company Munich Re announced that it would experiment with storing physical cash in order to avoid paying the ECB’s negative rates.

In a 2015 speech, James McAndrews, executive vice president and director of research at the New York Fed, noted that the expected duration of these policies also affects firms’ decisions to hold cash. “The longer the negative rates are expected to persist, and the lower they are, the more favorable are the returns to investing in a vault. Once the vault investment has been made, maintaining negative rates would likely become more difficult,” he said.

All together, these signs have led most economists and policymakers to believe that interest rates likely cannot go much lower. “We are basically at the effective lower bound,” Jean-Pierre Danthine, former vice chairman of the governing board of the Swiss National Bank, said at a June Brookings Institution conference.

Thus, despite slightly negative rates in Europe and Japan at the moment, economist Marvin Goodfriend of Carnegie

Mellon University, formerly with the Richmond Fed, says “the zero lower bound remains a serious constraint on monetary policy.” Moreover, he says, uncertainty over the duration of negative rate policies can exacerbate the reluctance of banks to pass on negative rates to retail depositors, weakening the effect of the policy by inhibiting the transmission of negative rates through the rest of the economy.

Breaking Through the Lower Bound

To take interest rates more deeply negative, central banks need some way to prevent depositors from fleeing to cash. The simplest approach would be to have cash pay the market interest rate (whether positive or negative) rather than zero percent. Doing so is complicated by the anonymous nature of cash, however. Without a way to track interest payments, there would be no way to prevent currency holders from claiming multiple positive interest payments on the same bill. And if rates went negative, cash holders would have no incentive to voluntarily pay what they owed.

Economists have offered a number of solutions to this problem over the years. The earliest one came from German economist Silvio Gesell in the early 1900s. Gesell suggested that bills could be stamped to show that interest had been paid, and only stamped currency would be accepted as legal payment. Goodfriend proposed a modern take on this same idea in a 2000 article. He suggested that bills be imbedded with a magnetic strip that would track the interest due at the time of deposit.

Others have proposed doing away with cash entirely and switching to a digital currency. In a 2014 National Bureau of Economic Research working paper, Harvard University economist Kenneth Rogoff noted that paper currency comes with a number of costs to society. Because it is anonymous, cash facilitates tax evasion and criminal activity. Rogoff cited estimates that more than half of the currency in circulation is likely used to hide transactions.

At the same time, Rogoff acknowledged that there would be potential costs to eliminating currency. The U.S. Treasury currently earns a profit on each dollar issued equal to the difference between its face value and the cost to produce it (known as “seigniorage”). To the extent that demand for cash is driven by a desire for anonymous transactions, transitioning to an electronic currency that is not anonymous could result in some lost revenue for the government as demand for currency declines. Additionally, Rogoff noted that moving to a new monetary standard could shake confidence in the dollar, which might have unforeseen consequences.

Attempts to eliminate currency would likely face political opposition from those who value anonymity in legal transactions. Still, some countries, like Sweden, have inched closer to an all-digital currency. According to a 2015 report from the Bank for International Settlements (BIS), physical bills and coins in circulation are equal to only about 2 percent of Sweden’s GDP (compared to roughly 7 percent for the United States). In fact, some of Sweden’s largest banks no longer accept cash deposits.

In the long run, the likelihood that most countries move to all-electronic currency is quite high, Goodfriend argues. “If you give me a long time horizon of 150 or 200 years, I’d be absolutely shocked if societies did not move to eliminate the zero lower bound by making currency electronic,” says Goodfriend. “As society gets increasingly digitized, the inconvenience and costs of using paper currency will become glaringly high.”

Goodfriend also notes that while holders of digital currency may lose money in times of negative rates, they could actually earn a positive return when rates are above zero, something paper money currently lacks. “If we expect that interest rates are going to be positive most of the time, then for most of the imaginable future, people are going to benefit from earning interest on currency.”

It may not be necessary to eliminate cash completely to achieve negative rates, however. Kimball has argued central banks could establish an exchange rate between physical currency and electronic currency at the cash window. For example, if the Fed wanted to adopt interest rates of negative 4 percent, the exchange rate for physical currency in terms of electronic currency would depreciate at 4 percent per year. Banks and financial markets would then pass along the negative rates on physical currency as well as electronic accounts to the rest of the economy. To alleviate banks’ concerns about losing retail depositors, Kimball has said the Fed could reduce banks’ payments to the Fed of negative interest on reserves in order to subsidize their provision of zero interest rates to small-value bank accounts. This would shield most retail depositors from the effects of negative rates.

Additionally, he argues that the depreciation of paper currency would likely be invisible in most everyday transactions, at least to a point. “If you go to the grocery store now where they accept both credit cards and cash, they’re likely to accept both payments at par,” says Kimball. That’s despite the fact that both payment methods are not equal for merchants. They pay a fee to card networks for card transactions but don’t typically pass that charge on to customers. As a result, Kimball suspects many merchants would be willing to accept the “fee” of a small depreciation of cash without passing it on to customers.

“If merchants are still accepting cash at par at the store and you’re still getting a zero interest rate at your local bank, what do negative interest rates in the financial markets look like to you?” he says. “On things like car loans, they just look like lower positive rates. Most people wouldn’t personally see any negative interest rates.”

Uncharted Waters

While recent experiences suggest negative rates are at least possible, some have questioned whether such moves are necessary or wise.

In a recent working paper, John Cochrane of the Hoover Institution at Stanford University argued that recent experiences in the United States, Europe, and Japan have shown inflation can be stable when interest rates are at zero. This seems to contradict fears that economies could be stuck in a deflationary spiral when interest rates are near zero, which would remove some of the incentive to quickly push inflation up using unconventional policies like negative nominal rates.

Deputy General Manager of the BIS Herve Hannoun suggested in a 2015 speech that negative rates could have a number of unintended consequences. They could encourage governments to borrow more heavily, further eroding fiscal discipline. They would impose a burden on savers, particularly on retirees who rely on savings and interest income. And because of their unprecedented nature, negative rates could signal that policymakers are even more pessimistic about economic conditions than the public believed, further eroding market confidence and actually inducing more saving rather than spending. In fact, something like this happened when Japan surprised markets by going negative in January. Normally, negative rates would be expected to depreciate a currency, but the yen actually appreciated as market participants panicked and clung even more tightly to safe assets like cash.

This is why communication from central banks is critical with these policies, says Goodfriend. “Any unorthodox move is complicated if the public has not been prepared for it. In that case, the central bank cannot be sure that these things will work as intended,” he says. But Goodfriend says most of the costs cited by critics of negative rates do not kick in only once rates fall below zero — they apply to all rate cuts. Cutting rates within positive territory also hurts savers and lessens the burden of public debt.

Still, negative rates represent largely uncharted territory for economists and policymakers, and many unanswered questions remain. The good news for monetary policymakers at the Fed and elsewhere is that they can wait and see how the experiments in Europe and Japan play out before making any decisions on negative rates. If it works, Goodfriend says he wouldn’t be surprised to see negative rate policy spread.

“If you’re standing around a pool and you don’t know what the temperature of the water is,” he says, “it’s a whole lot easier to jump in if somebody else goes first and tells you the water’s fine.” **EF**

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Long Run

BY ERIC LaROSE

Economists and policymakers frequently differentiate between the short-run and long-run effects of various economic changes and policies, but sometimes the difference between the two can seem unclear. To give one example, a Congressional Budget Office (CBO) report concluded that the 2009 American Recovery and Reinvestment Act (ARRA) had “raised real (inflation-adjusted) gross domestic product (GDP)” in 2014, even though it “will reduce output slightly in the long run.” What is the difference between the short run and long run, and how does this distinction actually matter for policy?

Broadly speaking, the long run is commonly defined as a period in which all relevant economic factors are flexible — for example, firms can enter or leave industries, or wages can fully adjust. Beyond that, no specific single definition exists, because the term means different things in different contexts. Economists cannot say how long this period of full adjustment actually takes for a given economic shock, so it is impossible to identify a precise future point separating the short and long runs.

In microeconomics, the long run is the period when all factors of production, including land, labor, and capital, are variable. In contrast, in the short run, at least one factor of production (usually capital) is fixed. Consider the case of a single manufacturing firm. It may take only weeks or even days for a firm to increase production by hiring more workers. But it could take several years for the firm to increase its capital by building another manufacturing plant. In this case, capital is fixed for a far longer period than labor, and the long run would be the period after this plant can be built.

One interesting microeconomic application of long-run effects stems from the fact that demand for most goods is more elastic — more sensitive to changes in price — in the long run than in the short run. When the price for, say, gas increases, many consumers who drive gas-powered cars will initially have no choice but to continue buying gas at the higher price level. As time goes on, however, they may begin to turn to alternatives such as hybrid vehicles and public transportation. In this long run, consumers have time to fully adjust their buying behavior in response to the increase in gas prices.

In macroeconomics, the long run is defined as the period in which factors such as prices, wages, output, and employment have returned to equilibrium after a shock. In the short run, these variables may not have fully adjusted, leaving the economy in a state of disequilibrium. This distinction has important implications for macroeconomic policy. In

particular, changes in the price level can affect short-run but not long-run output. Consider an increase in the total demand for goods and services, which increases the economy’s price level. In the short run, a firm may mistake the higher price level for greater demand for its particular good and thus produce more of it. Eventually, the increased production will bid up wages and other input prices, returning the firm’s supply of the good to its long-run level.

The inability of prices to influence long-run output affects the Fed’s monetary policy. Increasing the money supply can increase both short-run output and the price level, but in the long run, the money supply theoretically has no effect on real GDP, only on prices. Largely for this reason, the Fed does not set a quantitative

goal for its output-related objectives: In the long run, the level of output — and relatedly, employment — that the economy can achieve is determined by factors outside monetary policy.

Many macroeconomists have criticized the profession as well as policymakers for focusing excessively on the long run and neglecting short-run impacts of policies. John Maynard Keynes, often considered the father of macroeconomics, famously

said, “In the long run, we are all dead.” Contrary to popular belief, Keynes did not think the long run was unimportant; rather, he believed that economics would not be useful if it couldn’t show what happens in the short run and the processes by which the economy eventually returns to its long-run equilibrium. As he put it, “Economists set themselves too easy, too useless a task if in tempestuous seasons they can only tell us that when the storm is long past the ocean is flat again.”

Indeed, a fixation on maximizing long-run output may hurt the economy in the short run, and vice versa, as many economic policies have very different if not completely opposite short-run and long run effects. For instance, macroeconomic theory predicts that, all else being equal, expansionary fiscal policy such as the ARRA increases output in the short run by raising the total demand for goods and services in the economy. In the long run, however, such policy can actually reduce the economy’s output through an accumulation of debt and a lowering of the saving rate. Analysis by the CBO and others indicates that most likely the ARRA has indeed had these contrasting short- and long-run effects on the American economy.

The distinction between the short and long run thus reflects one of the most important lessons in economics: All decisions have trade-offs. The long run is important — but, as Keynes argued, the short run is too. **EF**



RESEARCH SPOTLIGHT

Market Jitters

BY HELEN FESSENDEN

An axiom for stock investors is to overcome emotional swings — whether panic or euphoria — and focus on the long term. Research has shown that sticking to steady, long-term bets will tend to bring higher yields than following the herd in and out of the market. Or, as Warren Buffett has put it, “Ignore the chatter, keep your costs minimal, and invest in stocks as you would a farm.”

For some people, however, this advice is hard to follow in practice, especially in times of extraordinary tumult, such as the 2008 financial crisis. But who is most likely to sell off stocks when markets hit turbulence? Researchers at the University of Michigan, Ohio State University, and the Internal Revenue Service (IRS) try to answer this question in a recent National Bureau of Economic Research paper that analyzes millions of tax returns from 2008 and 2009. Notably, they find that certain investors were indeed more likely to shed stocks during the crisis than others — those who were very high income and those who were over 60.

To select their sample, the authors analyze millions of anonymized tax returns from 2008 and 2009 and match them with IRS information on asset sales and demographic profiles. The transactions came to about \$6.8 trillion in stock sold during those two years. The authors then group the taxpayers according to adjusted gross income (averaged from 2000-2007, before the effects of the crisis and the stock sell-off skewed incomes) to separate the very high earners from the merely affluent and the middle class.

The researchers also employ a well-known metric, the VIX index, to measure market volatility. The VIX, which is based on data from options contracts, is widely viewed as a reliable leading indicator of turbulence. As a case in point, the VIX was stable through mid-2008 but then spiked in September and October, when Lehman Brothers collapsed, Congress took up TARP legislation, and the Fed took extraordinary measures to stabilize the economy. It rose from 0.23 on Sept. 8 to 0.8 on Oct. 27, peaked at 0.81 on Nov. 20, and only then started to decline. As it happens, between those dates, the Dow Jones Industrial Average fell from 11,510 to its lowest close of the year, 7,552.

So how did stock sales match up with the market gyrations? The authors find that for each 10.5 percentage point increase in the VIX in 2008-2009, sales volume among the top 0.1 percent of earners was 3.3 percent higher than that

of the bottom 75 percent on a day-to-day basis. This effect was even more pronounced over a 10-day lag, at 3.8 percent. In the 10 days following the collapse of Lehman Brothers on Sept. 15, 2008, this came to about \$1.7 billion in gross stock sales. The study also finds this effect for the high-income groups below the 99.9th percentile, but at steadily weakening levels.

In short, the higher your income, the more likely you were to shed stocks. But what about age? There, too, the researchers find a relationship: Older investors were more sensitive than younger ones to volatility. With each 10.5 percentage point increase in the VIX, subjects over 60 were 3.14 percent more likely to sell than those under 40,

although the effect dropped slightly over a 10-day lag to 3.04 percent. But notably, other demographic factors, such as sex, marital status, or geographic location, played no role. The specific sectors of the stocks also didn't matter.

The authors are careful to note that this study looks just at gross, rather than net, sales. Because IRS returns show only the value of stocks a taxpayer sold rather than those bought

and sold, the authors could use only the former. But they believe this omission is unlikely to make a difference in their findings because other research has shown a strong correlation between the gross and net sales. According to most of those estimates, each \$1 in gross sales translates into roughly \$0.33 in net sales.

The authors make clear their findings don't explain the motivations for selling; they just point to who is doing the selling. But they offer several suggestions to frame further research. One is that wealthier investors may track the market more closely and be more sensitive to swings; this group also may believe it has deeper knowledge of investing and therefore will try to outperform the market. For their part, older investors near or in retirement may well be more risk-averse, and selling stock is one way for them to reallocate their assets to more stable investments. Finally, the authors note that other studies have suggested younger and less wealthy investors are less likely to shed stocks that have accumulated losses, known as the “disposition effect.” Whatever the case, this study opens up an avenue for future research by emphasizing just how varied investor behavior really is and how different classes of investors react to market stress. **EF**

“Who Sold During the Crash of 2008-9?
Evidence from Tax-Return Data on
Daily Sales of Stock.”

Jeffrey Hoopes, Patrick Langetieg,
Stefan Nagel, Daniel Reck,
Joel Slemrod, Bryan Stuart.

National Bureau of Economic Research
Working Paper No. 22209, April 2016.

No More Free Lunch

BY ERIC LaROSE

In December 2012, an all-time high of 47.8 million Americans participated in the Supplemental Nutrition Assistance Program (SNAP), more commonly known as food stamps, up from 26.3 million in 2007. In addition to the Great Recession, changes in eligibility requirements accounted for much of this increase. Normally, under the 1996 Welfare Reform Act, SNAP allows able-bodied adults without dependents (ABAWDs) to receive benefits for only three months in a 36-month period unless they are employed or in a training program for at least 20 hours a week. The Act allows the U.S. Department of Agriculture (USDA) to approve waivers to these requirements for high-unemployment states, however, and in 2009, the agency waived the requirements nationwide.

These work requirements were initially implemented in the Welfare Reform Act due to concerns that the food stamp program provided a disincentive for recipients to work. The employment effects of work requirements for SNAP specifically have not been extensively studied, but broader studies of the Welfare Reform Act have found that it had a positive impact on employment incentives. For instance, a 2003 article in the *Review of Economics and Statistics* found that time limits for welfare alone explained “about 7 percent of the rise in employment” from 1993-1999.

With unemployment now returning to pre-recession levels, most states have been reinstating work requirements. On Jan. 1, 2016, some 22 states reinstated requirements, the largest number to do so simultaneously since the 2009 waiver. Of these states, six eliminated the waiver entirely; the remaining 16, including Maryland, North Carolina, and West Virginia, switched to a system of partial waivers for high-unemployment areas. These changes are estimated to affect between 500,000 and 1 million ABAWDs, who must either find employment or risk losing benefits.

States began reinstating work requirements as early as 2011, and many have seen a drastic reduction in SNAP caseloads. Robert Rector, a researcher at the conservative Heritage Foundation and an architect of the Welfare Reform Act, noted that within three months of Maine reinstating the requirements, “its ABAWD caseload plummeted by nearly 80 percent, falling from 13,332 recipients in December 2014 to 2,678 in March 2015.” Similarly, Kansas saw a 75 percent reduction.

Pointing to these states and others, advocates of these reforms argue that work requirements make good fiscal sense and help ensure that SNAP functions as a short-term safety net rather than a long-term dependency trap. Data from the Department of Labor and the Bureau of Labor Statistics indicate that in the two decades prior to the 1996 reinstatement of work requirements, nearly 70 percent of

SNAP spending went to individuals who had been enrolled in the program for five or more years. More recently, a Census Bureau survey conducted from 2009-2012 found that 38.6 percent of individuals who received any SNAP benefits during this 48-month period received them for at least 37 months, raising concerns that the nationwide 2009 waiver had encouraged the return of this long-term dependency.

Additionally, the doubling of SNAP program costs since 2008 — the USDA spent \$74 billion on the program in 2015 — has been driven partially by the increase in ABAWD caseloads. Reduced caseloads resulting from work requirements will help trim the \$10.5 billion per year spent on benefits for this group as well as administrative costs borne by states.

In contrast, opponents of these policy changes maintain that the vast majority of ABAWDs on food stamps genuinely need the benefits. Indeed, such individuals on average have much lower incomes than other SNAP recipients. A report from the liberal Center on Budget and Policy Priorities (CBPP) found that “unemployed, nondisabled childless adults on SNAP” had gross incomes averaging “17 percent of the poverty line — about \$2,000 per year for a household of one in 2015 — compared to gross income of 57.8 percent of the poverty line for the average SNAP household overall.” Thus, CBPP contends that many of the individuals at risk of losing food assistance are those who rely on it the most.

Even the best efforts of many unemployed ABAWDs to maintain SNAP eligibility may prove futile. Searching for employment, even for 20 hours or more per week, does not satisfy work requirements. Even while actively searching for work, ABAWDs have a hard time securing employment; a Government Accountability Office study found that they often lack basic job skills and are “the most difficult to serve and employ of all” SNAP recipients. Training programs, which can provide needed skills, do count toward work requirements, but states are not required to provide such programs.

To remain eligible for food stamps, affected individuals must find employment or a spot in a training program within three months of their states restoring requirements. Many have been unable to do so. In Wisconsin, only 12,000 ABAWDs were able to find work or a spot in a training program within three months, while 41,000 lost access to food stamps. In Kansas, which reinstated requirements in January 2014, only 60 percent of those affected found a job by the end of the year.

Food stamp enrollment fell from 45.2 million to 44.3 million between December 2015 and March 2016, and at least some of this decrease is likely due to reinstated work requirements. If enrollment continues to decline over the coming months, as it has over the past few years, an improving economy may not be the only explanation. **EF**

Why Do Economists and the Public Disagree?

BY AARON STEELMAN

Winston Churchill remarked that if “you put two economists in a room, you get two opinions, unless one of them is Lord Keynes, in which case you get three opinions.” Both Churchill and John Maynard Keynes have been dead for more than half a century, but the perception of such disagreement among economists remains widespread. Is that true? Less than you might think. The bigger division of opinion is between economists and non-economists.

Since September 2011, the Initiative on Global Markets (IGM) at the University of Chicago’s Booth School of Business has surveyed a panel of economists about a wide variety of questions. Panel members are drawn from top economics departments around the United States across different subfield specialties, age cohorts, and political persuasions. Economists Roger Gordon and Gordon Dahl of the University of California, San Diego analyzed more than a year’s worth of survey responses and concluded that overall “the main finding is of a broad consensus on these many different economic issues.”

Also, in 2005, economist Robert Whaples of Wake Forest University surveyed a random selection of Ph.D.-holding members of the American Economic Association. Respondents demonstrated considerable agreement, as they did in a similar survey Whaples conducted in 2007.

So why the perception of broad-based disagreement among the profession? David Henderson, an economist at the Naval Postgraduate School and editor of *The Concise Encyclopedia of Economics*, suggests two reasons. First, the media often tend to present economic issues as more controversial than they really are. Second, people often don’t distinguish between economists’ positive and normative views. In other words, two economists might agree that a certain policy will produce a similar result but differ over whether that result is desirable.

While the degree of squabbling among economists is likely commonly overstated, the difference of opinion between economists and non-economists is, in fact, substantial. Economists Paola Sapienza of Northwestern University and Luigi Zingales of the University of Chicago compared data from the IMG survey with responses from the Chicago Booth/Kellogg School Financial Trust Index (FTI) panel, which surveys Americans on financial, economic, and public policy issues. On the 19 questions asked of both IMG and FTI respondents, Sapienza and Zingales report that agreement with a statement differs 35 percentage points between the two groups, on average.

What accounts for the difference? In a series of papers and in his book *The Myth of the Rational Voter*, George Mason University economist Bryan Caplan suggested that

economists and non-economists tend to view the world through a different lens. In particular, Caplan argued that non-economists demonstrate four biases not generally shared among economists: an antimarket bias, an anti-foreign bias, a make-work bias, and a pessimistic bias.

Arguably, the antimarket bias presents itself most commonly among what might be deemed fundamentally microeconomic issues. For instance, on the question of whether a carbon tax would be a less expensive way to reduce CO₂ emissions than mandatory standards for cars, fewer than a quarter of FTI respondents agreed, in contrast with more than 92 percent of IMG respondents.

Regarding antiforeign bias, in a 2004 speech William Poole, former St. Louis Fed president, noted that when asked about trade generally, non-economists often say they view it positively but when asked more specific questions they voice opposition. For instance, in a 2016 Gallup poll 58 percent of Americans said that foreign trade represents more of an opportunity for economic growth than a threat to the economy. But when asked if they supported higher import taxes on Chinese goods, more than twice as many respondents said yes than no, with about a quarter saying they were uncertain. Poole argues that opposition to trade largely stems from the fact that the costs of international trade — jobs lost in some domestic industries — are highly visible while the benefits — for instance, lower costs of goods — are harder to see.

The make-work bias is present in the trade debate as well. Many people acknowledge that trade permits specialization in a way that enhances productivity but favor protectionism anyway. Perhaps that is because they are concerned, for myriad reasons, with the change that trade inevitably brings, as non-economists are far more likely than economists to state that life was better in, say, 1960 than it is today — an example of pessimistic bias.

Finally, Sapienza and Zingales suggest that some of the recorded difference in opinion between economists and non-economists may be due to semantics. For example, nearly all economists surveyed agreed that the 2009 American Recovery and Reinvestment Act (ARRA) lowered the unemployment rate, compared to fewer than half of non-economists. It’s likely many non-economists read that question as asking whether the ARRA was worth the costs, while economists read it more narrowly, with many believing it lowered the unemployment rate while also thinking there would have been better ways to achieve that end.

What’s the upshot? Significant differences between economists and non-economists are likely to remain. But the economics profession also may be able to do a better job of explaining its views to the public and, in so doing, perhaps bridge some of that gap. **EF**

Will America Get a Raise?

Economists debate why wage growth has been so sluggish during the recovery from the Great Recession.

BY HELEN FESSENDEN

The persistence of slow wage growth since the Great Recession — amid a steady economic recovery and a sharp drop in unemployment — has become one of the biggest puzzles for economists in recent years. It's not just an issue for economists; in this election cycle, weak wage growth has been used to support proposals ranging from strengthening unions to boosting the federal minimum wage. More broadly, stagnating incomes have likely fed into the broader ongoing economic pessimism among Americans. One recent Pew Research survey, for example, found that 73 percent of those polled described economic conditions as fair or poor, while only 27 percent considered them excellent or good.

Numerous measures indicate that wage growth has indeed been sluggish since the Great Recession compared to the decade before. For example, in a working paper released earlier this year, economists Mary Daly of the Federal Reserve Bank of San Francisco and Bart Hobijn of Arizona State University found a general deceleration in wages across four different measures of labor compensation compared to the 2000s. These measures include average hourly earnings of private sector production and nonsupervisory workers, as well as compensation per hour in the nonfarm business sector; they also include the quarterly median usual weekly earnings of full-time wage and salary workers, which captures overtime pay and trends in the average workweek, and the broader quarterly Employment Compensation Index, which tracks both wages and benefits. Even though these series cover disparate forms of labor compensation, they are quite closely correlated. (See chart.)

So how much have wages decelerated? According to one common benchmark — median usual weekly earnings — real wage growth averaged 0.57 percent from 1980 through the first quarter of 2016. That average has been lowered by particularly slow real wage growth since the end of the Great Recession: It has averaged just over half that despite the steady drop in joblessness to pre-recession levels. Across most of the other measures as well, real wage growth was notably soft during the recovery.

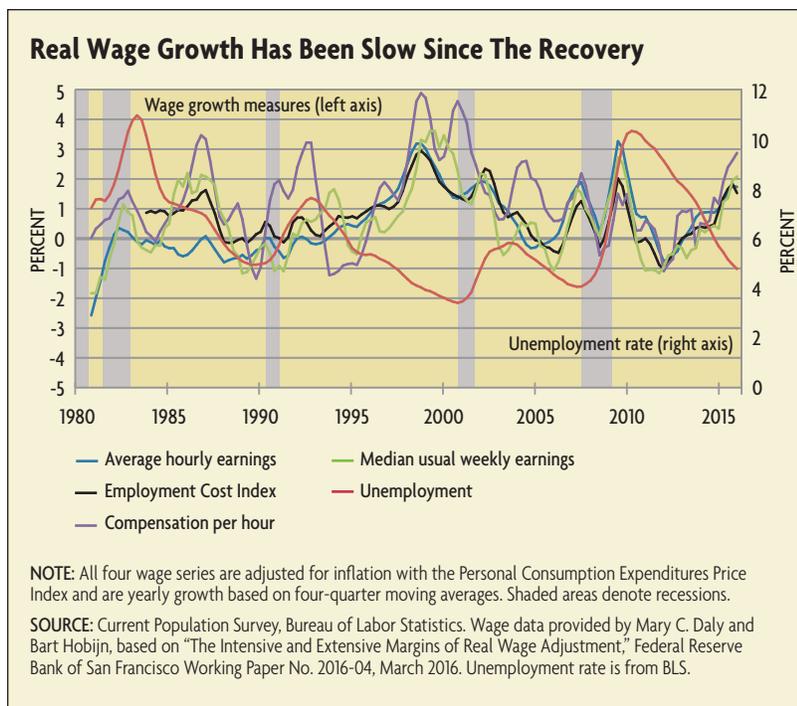
But does this slowdown suggest something unusual, or is it typical during recoveries? Based on the most recent research, economists suggest that the answer lies somewhere in between. One challenge, however, is the nature of aggregate statistics, which could have been distorted by the fact that the Great Recession was severe in so many respects beyond the labor market. Moreover, many aggregate measures can be skewed by composition effects, that is, by changes over time in terms of who's working, and the types of jobs they hold. This leads to another question for economists: Does slower wage growth indicate hidden residual labor market weakness — which the Fed could potentially help address through a more accommodative monetary policy? And are lower wages, and their implications for the well-being of workers, here to stay?

In the case of the recent recovery, economists have given special scrutiny to factors such as the changing makeup of the labor force as well as the effects of the baby boomer retirement wave. If researchers can accurately adjust for these factors, they may get a better picture of whether slow wage growth is a sign that workers have lost their bargaining power due to continuing, if unseen, labor market “slack,” or underutilization.

Another question is whether the recent trend of slow wage growth is related to longer-term shifts that predate the recent recovery. For example, productivity has been slumping since around 2000, and economic theory suggests wages and productivity should be closely tied. Moreover, the share of national income that goes to labor, compared to capital, has been dropping since then as well. Economists have been paying closer attention to these particular changes to unearth longer-term forces, separate from the business cycle, that could explain what is happening to the U.S. labor market — and perhaps labor markets globally.

Wages and the Business Cycle

The question of how wages respond to the business cycle is an age-old debate in economics. Standard economic theory tells us that wage growth and unemployment should be closely linked: Aggregate wages rise when the unemployment rate falls and slow when the unemployment rate rises. Then, in the 1930s, John Maynard Keynes advanced the theory that wages were actually “sticky,” or imperfectly responsive, and didn't fall during downturns as much as fundamentals would suggest. In the following decades, more debate ensued over such questions as how to best measure wages and compensation, and whether they were



closely tied to the business cycle at all.

In an influential 1995 essay that reviewed the research on real wages and cyclicity since World War II, economists Katharine Abraham of the Bureau of Labor Statistics and John Haltiwanger of the University of Maryland noted the array of methodological challenges at stake. For example, the relationship between real wages and the business cycle can be affected by which measurement of inflation — consumption-based or production-based — that an economist uses to define the real wage. The relationship also varies depending on the composition of the workforce and the industry in question, as well as on the time period. Abraham and Haltiwanger found some cases in which wages moved closely with the business cycle, such as the early 1980s, when the real wages of workers in steel manufacturing were especially hard hit during the recession. There were other cases, especially before 1970, when a cyclical effect was less discernable.

But they did note one important phenomenon over the decades, one that economists such as Daly and Hobijn have expanded on more recently: The ranks of the employed tend to develop a larger concentration of high-skilled workers during recessions (as more of the lower-skilled are laid off), while the opposite happens during recoveries (as the lower paid, lower-skilled get jobs). In short, the demand for lower-skilled workers seems to be more sensitive to the business cycle than that of higher-skilled workers. This may explain why aggregate wages don't drop as much as expected during recessions but then can soften considerably as the economy improves.

Taking a longer view, however, the authors found that once measurement and composition issues are accounted for, real wages are neither systemically procyclical nor

During the Great Recession, workers who stayed on at their jobs were among the higher skilled and better paid, whereas those who were let go were lower skilled and tended to have wages below the median.

counter-cyclical over time. What the research did show, they concluded, was the importance of using consistent methodology when looking at real wage growth over time.

Who's In, Who's Out?

So was there anything unusual in the way wages responded to the Great Recession and its recovery? And was this a case of “counter-cyclical bias” on wages? Daly and Hobijn are among the economists who have tried to answer this. They have been exploiting econometric tools to explain, among other things, why aggregate wages are generally less variable than other indicators such as the unemployment rate, and why there is such a weak correlation between unemployment and wage growth.

In their recent paper, Daly and Hobijn provided one way to eliminate the composition effects that have long complicated these studies by devising a way to look at median wage growth for the same people year after year. Their innovation was the way they used “micro data” — information on individuals, rather than composite measures or a mean wage of a given job — to track wages of workers throughout the recession and recovery. That way, they could see whether these people stayed continuously employed, retired, lost their job, were forced to work part-time, or dropped out of the labor force and later re-entered. With that information, they could determine how the wages of any given individual in these groups fared relative to the macro trend as seen in aggregate wages.

What actually happened during the Great Recession? It turns out that workers who stayed on at their jobs were indeed among the higher skilled and better paid, whereas those who were let go were lower skilled and tended to have wages below the median. The growing concentration of higher-paid workers meant the aggregate wage stayed surprisingly high even as gross domestic product plunged and unemployment spiked. Then, as the economy picked up, the wages of the continuously employed rose as well, just as economic theory would predict. At the same time, however, the new hires coming back into the full-time workforce — whether they had been unemployed, forced to work part-time, or had dropped out of the labor force altogether — re-entered at substantially lower wages compared to their continuously employed peers. Daly and Hobijn found that about 80 percent of these “re-entries”

started their new jobs below the median wage.

So even as the economy was improving and unemployment was falling, the effect of this pro-cyclical hiring was to pull the aggregate wage down, producing the usual counter-cyclical bias in wages. In relationship to the business cycle, then, the effect following the Great Recession was typical, but the degree was unusual — because so many “re-entries” were coming back into the workforce at the same time, at extremely discounted wages.

At the same time, a secular trend was unfolding that re-enforced the post-recession slowdown in wage growth: The mass retirement of baby boomers, a cohort of 76 million people. Older Americans who were exiting the labor force tended to be among the higher earners due to age and experience. So the slowdown in wage growth stemmed from both cyclical composition factors — the re-entry of lower-paid, formerly unemployed workers as hiring picked up — and secular ones — namely, the changes in the demographics of the U.S. labor force, as lower-paid younger workers became a larger share of the workforce. The severity of the downturn and number of layoffs, as well as the outsized effect of mass retirements due to their relatively large share of the population, had an especially pronounced effect on the aggregate wage.

Other researchers have found similar results that show a substantial wage penalty for those who re-entered the workforce after the Great Recession. A group at the New York Fed, led by Ayşegül Şahin and Giorgio Topa, used data from the 2013 New York Fed Survey of Consumer Expectations to see how workers who stayed continuously employed fared versus those who had a break in full employment. The researchers found a similar pattern: No matter what the last wage was of those workers who had left full-time work, they re-entered the workforce at significantly lower wages. For example, among workers who switched from one job to another without a break, the average starting wage was around \$20 an hour, slightly more than a dollar above their prior hourly wage. For people who re-entered full-time employment after a stretch of part-time work, unemployment, or disengagement from the labor force altogether, they started their new job at significantly discounted pay, below \$15 an hour, even though their average wage at the last job was close to that of their employed counterparts, at almost \$18 an hour.

In a blog post summarizing these findings, the researchers used the analogy of a “job ladder,” in which typical workers make their way up each rung over time, with each step leading to better jobs and higher pay. But if this trajectory is interrupted — as it was for so many workers during the Great Recession — with spells of either unemployment or involuntary part-time employment, aggregate wage growth is weighed down by the discounted pay of “re-entries.” If wage growth is typically explained by job-to-job transitions in which workers move on to better matches, the authors wrote, “perhaps we should explore the importance of job-to-job transitions — rather than movements in the

unemployment rate alone — when thinking about the recent dynamics of wage growth.”

Hobijn also finds the “ladder” to be a good analogy. “In the Great Recession, people didn’t just fall down the ladder — they fell much further than what used to be the case,” he says. “And this happened to a much larger share of workers than in previous downturns.”

A Shrinking Slice of the Pie

Another possible driver of slower wage growth is the long-term drop in productivity growth. Productivity growth surged in the late 1990s but then slid in the 2000s. After a brief spike during the recession, it has barely crept along in recent years. This slide has prompted debate over the drivers of lower productivity, in part because productivity can be difficult to measure outside of manufacturing, and in part because this appears to be a global trend. What is clear, however, is that U.S. productivity growth has declined in recent years.

A slowdown in productivity growth, according to theory, would lead to a corresponding decline in wage growth because paychecks reflect the fact that workers are producing less. And historically, the two measures have seen a close correlation. In recent years, however, the most commonly cited measures of wage growth have not kept pace with productivity growth to the extent they once did once they are adjusted for inflation based on output to be comparable with productivity statistics. (This trend also applies to compensation including benefits, which have become a larger part of most workers’ total pay packages.)

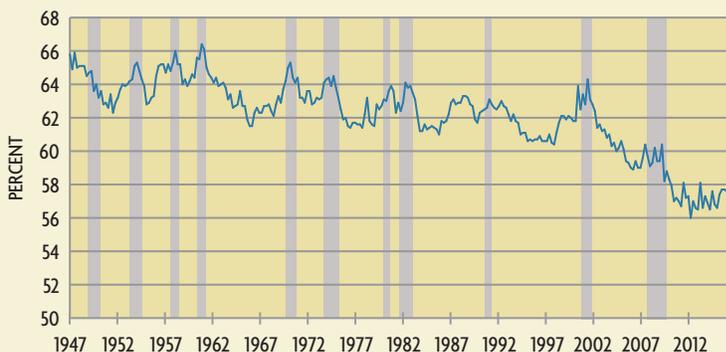
When real wage growth lags productivity growth, the result is a phenomenon known as a decline in the labor share of income: the amount of national income that goes to wages and other forms of compensation versus the amount that goes to capital (such as rents, dividends, and capital gains). And indeed, that is what has been happening since about 2000. (See chart). As with productivity, there is a lively debate over the drivers of this drop in the labor share, but the decline is real. In the decades after World War II, the labor share steadily averaged around 62 percent; then, in 2000, it began dropping and is now around 56 percent. Most economists say this trend is due to a decline in wage growth rather than an increase in productivity.

One especially curious feature of the drop in labor share is that it appears to be global. To be sure, there is international variation in how much of each economy’s output is split between labor and capital, and how income is measured. That said, economists do think a variety of common structural changes in the global economy may be at play. Some of the more popular explanations include “capital deepening” (a substitution of capital for labor in the production process), globalization, and rising inequality. But economists are divided over the power of any one explanation.

Hobijn, joined by Şahin and University of Edinburgh economist Michael Elsby, analyzed some potential

Labor’s Share Of Income Has Declined Since 2001

Labor share of nonfarm business income (percent of total)



SOURCE: Bureau of Labor Statistics, updated through first quarter of 2016

explanations in a 2013 article from the *Brookings Papers on Economic Activity*. Technology and equipment have become relatively cheaper, and far more sophisticated, over the decades, so to the extent that capital has replaced labor, it could be redistributing income from labor to capital. The problem with this theory is that the rate of growth in capital intensity has actually slowed down since the decline in labor share began. The authors also address the argument that the drop in labor share has occurred because the wealthy may be accruing more of their income through capital. Recent increases in income inequality, they point out, have been largely driven by wage divergence, not investment income. Higher wages at the top would, in fact, help to keep the labor share high, which means the decline in labor share has occurred despite rising inequality, not because of it. In short, these two explanations — capital deepening and inequality — don’t quite succeed in getting to the heart of this puzzle.

What about globalization-based explanations? U.S. firms, like firms across the world, typically offshore the more labor-intensive functions of their production chain to countries where wages are cheaper, while leaving the capital-intensive functions at home — in turn, lifting the capital side of the income share. But here, too, the problem is timing, because this shift began well before the decline in labor share. Elsby, Hobijn, and Şahin did point to an interesting correlation, however: They found that industries with the most exposure to imports (predominantly manufacturing) also saw the largest declines in their labor share, possibly through the offshoring of the more labor-intensive components of the U.S. supply chain. While noting this is only a correlation, not causation, they calculated that this effect accounts for much of the drop in the labor share. The effect of import exposure on wages suggests that the workers are increasingly competing with global counterparts for jobs — through offshored production lines and trade — thus driving down wages of workers in those sectors. But the authors cautioned against reaching any firm conclusions without more evidence.

Whatever the cause, the long-term trend of the labor share is one important part of understanding weak wage growth over the long run. As Hobijn put it, “Wage growth can be explained by three things: if what you produce is valued more, if you become more productive, or, if the labor share of income increases. The fact that productivity growth is slowing and the labor share is declining suggests that we’ll see more sluggish wage growth going forward.”

Wages and Normalization

The new research on recent wage behavior may provide economists with a better understanding of the dynamics that have been at play in the recovery. For the workers affected, and for policymakers seeking solutions, the ever-shifting dynamics of the labor market may offer clues on what tools can help people stay productive and steadily employed — for example, through investment in education, job training measures, or job-sharing schemes. However, economists are far from having the ideal measure of wage growth that Abraham and Haltiwanger envisioned. Or, furthermore, one that provides a reliable indicator of labor market slack for the Fed.

What does slack mean, exactly, for Fed policy? Some observers argue that stagnant wages signal that the economy still has significant room to expand without generating inflation, because there are still many part-time workers and workers who have dropped out of the labor force, who would like to work full time but cannot. These workers may be willing to take new jobs at wages well below what they used to earn if such jobs were available. This has led some to argue that the Fed should delay raising rates on the grounds that it has yet to fulfill its mandate on reaching maximum employment.

Some groups have gone a step further and argued that the Fed should formally consider a wage growth target when it makes policy. For example, the Economic Policy Institute, a liberal think tank, has argued that nominal wages need to rise an annualized 3.5 percent to 4 percent (in other words, pre-recession rates), rather than the current 2.5 percent, before the Fed should consider raising rates. The EPI reasons that this growth rate accounts for both

the current trend in productivity growth and the Fed’s 2 percent inflation target.

A more widespread (if not universal) interpretation on the Federal Open Market Committee, however, is that slack is diminishing, as noted recently in the committee’s statement following its July meeting. Fed Chair Janet Yellen noted in June that the Fed is “beginning to see slightly faster wage growth based on [nominal] average hourly earnings... about 2.5 percent and that’s up from the very low level it was.” She also cited the data provided by the Atlanta Fed wage tracker, a widely used nominal-wage aggregate series based, in part, on Daly and Hobijn’s methodology, showing that wage growth has modestly accelerated in the last two years. And a broader gauge, the Board of Governors’ Labor Market Conditions Index, shows that most labor-market indicators are back to pre-recession levels.

Finally, even if there is a smaller amount of slack left, it means that people returning to full-time work may face a lower starting wage because there is still relatively more labor supply than labor demand, compared to the pre-recession economy. Also, workers coming back to full-time employment may well be earning discounted wages that are lagging trend productivity growth — and that may not change rapidly even as the labor market improves.

“Wage growth is really more of a lagging indicator of slack,” says Daly. “Once unemployment drops down to its natural rate, it will take time to pressure wages upwards because you have more people outside the workforce waiting to get back in. In other words, labor markets adjust first through quantity — employment — and then through price — or wages.”

This adjustment is part of what Yellen and other Fed officials will continue to look for as they decide how quickly to normalize monetary policy, as well as the sustainability of progress in other gauges of labor market health. But for economists more generally, the tougher challenge is in understanding the longer view — both the historical trend, and the outlook in the decades ahead — of what kind of fundamental changes might keep a lid on robust wage growth over time. **EF**

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NUCLEAR REACTIONS

Lessons learned from projects in Georgia and South Carolina might determine the course of U.S. nuclear development for decades to come

BY KARL RHODES



Georgia Power and its partners are building two nuclear reactors at the Vogtle Electric Generating Plant near Waynesboro, Ga.

Five years ago, Stanford economist Geoffrey Rothwell and Berkeley economist Lucas Davis made a \$20 bet on the cost of two nuclear reactors under construction in Georgia. Rothwell wagered that units three and four at Georgia Power's Vogtle Electric Generating Plant would cost less than \$4,200 per kilowatt of capacity. Davis bet they would cost more.

"I went easy on Geoff and agreed to exclude financing costs and focus only on the 'overnight' cost of construction," quips Davis, who heads the Energy Institute in the Haas School of Business at the University of California, Berkeley.

"I can't remember whether we used 2007 dollars or 2011 dollars," hedges Rothwell, who retired from Stanford University to become principal economist for the Nuclear Energy Agency at the Organisation for Economic Co-operation and Development.

Davis and Rothwell are not the first to gamble on the high upfront costs of nuclear power plants. Nuclear construction boomed in the 1960s and early 1970s, but in the mid-1970s, rising electricity prices triggered increased scrutiny of utilities' capital expenditures. Safety and environmental fears also intensified in 1979 when a film called *The China Syndrome* portrayed a nuclear power plant on the verge of a total meltdown. The movie debuted 12 days before a partial meltdown occurred at Three Mile Island in Pennsylvania. No one got hurt, but the incident created a sense of panic that radiated throughout the nation. Orders for new reactors dwindled to zero in the United States, but most American reactors continued to deliver clean, reliable,

low-cost power for decades with no major problems.

In the mid-2000s, to rekindle nuclear development, the federal government streamlined the licensing process and offered loan guarantees, tax credits, and production incentives. Politicians also started talking about ways to limit carbon emissions substantially after another film — *An Inconvenient Truth* — fanned fears of global warming. In terms of publicity, the movie seemed to give back to nuclear development some of what *The China Syndrome* had taken away. As natural gas prices spiked above \$10 per thousand cubic feet, electric utilities applied for permits to build 24 new reactors, but their enthusiasm faded quickly. The recession of 2007-2009 stunted growth in demand for electricity, natural gas prices fell sharply, and a tsunami slammed into the Fukushima Daiichi Nuclear Plant in Japan.

Today, only four of those 24 proposed reactors are under construction: the two Vogtle units at the crux of Davis and Rothwell's wager and two reactors of the same type at the V.C. Summer Nuclear Station in South Carolina. These two projects are only 55 miles apart as the crow flies; if nuclear construction has come to a crossroads in the United States, this is it.

Why the Southeast?

Nearly all active proposals to build nuclear power plants are confined to the Southeastern United States for three primary reasons. First, power generation in the region is dominated by large, well-capitalized companies with regulated returns on investment. In other words, if they can

convince their utility commissions that building nuclear reactors is a prudent use of resources, they can pass along the development costs to their ratepayers. Second, nearly all Southeastern states have adopted CWIP (cost of work in progress) accounting, which allows a utility to start passing along some financing costs to ratepayers while a plant is under construction. Third, population growth and the increasing use of air conditioning per capita has continued to increase demand for electricity in the Southeast relative to other regions of the United States that have had significant, positive experience with nuclear power.

Georgia Power expects demand for electricity to rise 27 percent in the Southeast by 2030, with Georgia's population growth driving much of that increase. To help meet that anticipated demand, the company is adding two reactors to its Vogtle plant, a facility it owns jointly with Oglethorpe Power, Municipal Electric Authority of Georgia, and Dalton Utilities. Southern Nuclear, a subsidiary of Georgia Power's parent company, oversees the project. These partners are building the first new nuclear units in the United States in the past three decades. (The Tennessee Valley Authority, or TVA, completed a reactor this year, but the TVA received a construction permit for that unit in 1973.)

Vogtle also features the U.S. unveiling of the Westinghouse AP1000, a 1,117-megawatt reactor that is designed to be less expensive to build, operate, and maintain. Compared to earlier-generation reactors, the AP1000 has 50 percent fewer valves, 35 percent fewer pumps, 80 percent less piping, 45 percent less building volume, and 70 percent less cable. In addition to Westinghouse, the other primary contractor on the project was Chicago Bridge & Iron.

The AP1000's modular design was intended to facilitate faster construction, but by the time Rothwell and Davis made their wager in 2011, Vogtle's owners and contractors already were arguing over who would pay for design changes and licensing delays caused in part by Nuclear Regulatory Commission actions. (The project is now running about three years behind schedule.) The owners and contractors finally settled their differences in late 2015 by agreeing to add \$915 million to the construction contract, bringing the cost forecast to \$11.9 billion — up about \$2.2 billion from the company's original estimate — not including financing costs. Also related to the settlement, CB&I sold its nuclear construction business to Westinghouse Electric, which then hired Fluor Corp. to manage the construction workforce.

These new arrangements also apply to the AP1000 reactors that South Carolina Electric & Gas Co. (SCE&G) is installing at its Summer Nuclear Station. The company owns 55 percent of the project with 45 percent belonging to Santee Cooper, South Carolina's state-owned utility. The cost forecast for the new Summer reactors has increased to \$10.1 billion in 2007 dollars — up about \$1.8 billion from SCE&G's original forecast, not including financing costs.

In addition to this cost overrun, one of the units at Summer is about 19 months behind schedule as of mid-2016, while the other unit is more than three years behind.

Watching and Learning

Charlotte, N.C.-based Duke Energy and Richmond, Va.-based Dominion Resources appear to be next in line with proposals to build reactors in the Southeast. But executives at both companies say they are happy to watch and learn from the Vogtle and Summer projects and from similar reactors under construction in China and Japan.

By the end of this year, Duke expects to receive combined operating licenses (COLs) from the Nuclear Regulatory Commission to install two AP1000s in Levy County, Fla., and two AP1000s in Cherokee County, S.C. But the company would not break ground immediately on these units.

"We want to see what happens in China since Westinghouse is building four of these same units in China," says Chris Fallon, Duke's vice president for nuclear development. "I think they are targeting loading fuel sometime at the end of this year or the beginning of next year. And we'll see how the projects are delivered at Vogtle and Summer."

Duke collaborates with the owners of the Vogtle and Summer projects as well as with Florida Power & Light (FP&L), a subsidiary of Juno Beach, Fla.-based NextEra Energy, which has proposed building two AP1000s at its Turkey Point Nuclear Power Plant south of Miami.

"We work together in a group called APOG, which stands for AP1000 Owners' Group," Fallon explains. "We follow the construction and operational readiness activities at Vogtle and Summer very closely. We partner with them on both resolving licensing-type issues that are needed by both applicants and license holders as well as working through construction issues. So if Duke and FP&L decided to move forward, we've captured those lessons learned and know how to apply them."

Dominion Resources is not part of APOG because it has selected a different nuclear technology to expand its North Anna Power Station in Louisa County, Va., where the company already operates two reactors. Instead of the AP1000, Dominion plans to install a GE-Hitachi ESBWR (economic simplified boiling-water reactor). "The GE-Hitachi design fits the North Anna site better, and we have the cooling capacity to accommodate a somewhat larger reactor," explains Mark Mitchell, Dominion's vice president for generation construction. The GE-Hitachi reactor would add 1,470 megawatts of capacity — about 32 percent more than an AP1000 unit.

Even though Dominion is pursuing a different technology, Mitchell remains keenly interested in the Georgia and South Carolina projects. "We are sharing lessons learned with Georgia Power and with SCE&G," Mitchell says. "We have had people onsite at Vogtle." Dominion also is sharing lessons learned with Detroit-based DTE Energy, which has obtained a COL for a GE-Hitachi ESBWR in Michigan, and with companies that are installing similar GE-Hitachi reactors in Japan.

Both Mitchell and Fallon emphasize that their companies are strongly committed to nuclear power, but they decline to speculate about when their companies will start

pouring concrete to build their proposed units.

“I personally think that we will build a third reactor at North Anna, but I don’t know what the timeframe will be,” Mitchell says. “But certainly, it makes sense to obtain the license and have the option.”

Putting Fears Aside

The possibility of a costly accident has factored into the development of nuclear power plants since the very beginning. In 1957, for example, the federal government passed the Price-Anderson Act to encourage nuclear investment by capping the total liability a nuclear operator would face in the event of catastrophic failure.

“Nuclear power has long been controversial because of concerns about nuclear accidents, storage of spent fuel, and about how the spread of nuclear power might raise risks of the proliferation of nuclear weapons,” Davis wrote in a 2012 article in the *Journal of Economic Perspectives*. These concerns are real and important, but nuclear construction costs are so high that it is “difficult to make an economic argument for nuclear even before incorporating these external factors,” he contended.

In his article, Davis compared the “levelized costs” of electricity generated in the United States by nuclear, coal, and natural gas plants. Using a model developed by economists at the Massachusetts Institute of Technology (MIT), he estimated these costs by calculating long-term expenses for construction, operation, maintenance, and fuel and then discounting those combined costs back to a present value for each type of power plant. The results are equivalent to the real price per kilowatt hour of capacity that each plant would need to break even over its lifetime.

In the MIT model’s baseline comparison from 2009, coal was the cheapest option, natural gas was a close second, and nuclear was a distant third. When Davis updated MIT’s assumptions regarding construction costs and fuel costs, natural gas surged ahead. When he added a hypothetical tax of \$25 per ton of carbon dioxide, natural gas still finished first and nuclear still finished last, but nuclear moved much closer to coal and somewhat closer to natural gas.

In the years since that article was published, natural gas prices have gone down even more and nuclear construction costs have gone up, “so a utility would be crazy to build anything other than a combined cycle natural gas plant right now,” Davis concludes. The owners of Vogtle and Summer, he quickly adds, “could not have guessed that natural gas would be as cheap as it is now.”

Executives at Georgia Power and SCE&G declined to be interviewed for this story, but Georgia Power provided written answers to questions about the company’s choice between nuclear and natural gas: “Completing the new Vogtle units remains the best and most economic option for meeting the needs of our customers, over the next best option, which would be combined cycle natural gas — this has been demonstrated repeatedly in detailed semi-annual analyses of the economics of the Vogtle project. We absolutely appreciate the

value of natural gas as part of a diverse fuel mix. ... However, we have to be prepared for natural gas prices to increase in the future.”

SCE&G makes similar arguments on its parent company’s website. “SCE&G’s customers are enjoying the benefits of lower cost gas that shale gas fields and fracking technology has made available recently,” the company said, but “wholesale natural gas prices are currently unregulated, and many question the long-term impacts of fracking.” Also, “gas producers are working on strategies to export their natural gas to overseas markets, which may place upward pressure on price.”

Making a multibillion-dollar decision between expanding nuclear capacity or natural gas capacity boils down to how much value you place on fuel diversity, says Mitchell at Dominion. “From where I sit, fuel diversity is a really good thing. It pays dividends in the long run.”

Managing Construction Costs

The vagaries of natural gas prices and the politics of carbon restrictions are impossible to predict, but the other key variable in Davis’s model, construction costs, has been trending upward since 1970 — especially in the United States. Davis was banking on a continuation of this trend when he made his bet with Rothwell.

Davis blames some of this cost escalation on a “rapidly evolving” regulatory process. “A joke in the industry was that a reactor vessel could not be shipped until the total weight of all required paperwork had equaled the weight of the reactor vessel itself,” he says.

Georgia Power echoes that comment in less colorful terms. “Nuclear is a complex, highly regulated process in general — construction is tied to specific, stringent safety and design standards,” the company says. Georgia power also highlights another cost factor that is unique to its current construction: “The Vogtle project is the first new nuclear to be built in the United States in more than three decades and required the re-establishment of a nuclear supply chain that has not existed in the United States in a generation.”

Robert Rosner, the founding co-director of the Energy Policy Institute at the University of Chicago, agrees with Georgia Power’s supply chain argument. “Nuclear power is experiencing renewed learning after the decline in supply chain experience,” he wrote in a forward to Rothwell’s 2016 book, *Economics of Nuclear Power*. “The build rate of nuclear reactors over the past few decades has been low in North America and Europe; as a consequence, the requisite highly trained workforce for building reactors is no longer in place. This is a situation that leads to considerable risks in construction cost estimates.”

The supply chain established to build the Vogtle and Summer projects should significantly benefit Duke Energy and FP&L if they decide to install their proposed AP1000s. But Davis questions whether the collective experience of building four reactors of the same type will generate

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WHO WANTS TO START A BANK?

Virtually no new banks have opened since the Great Recession began. What's behind this drought, and should we be worried?

BY TIM SABLİK

In late 2013, the Bank of Bird-in-Hand opened its doors in Pennsylvania's Amish country. Even in normal times, a bank featuring a drive-through window built for a horse and buggy would have drawn curious onlookers. But the Bank of Bird-in-Hand made headlines for another reason: It was the first newly chartered bank anywhere in the United States in three years. According to the Federal Deposit Insurance Corporation (FDIC), there have been only seven new bank charters since 2010. By way of comparison, there were 175 new banks (or "de novos," as they are called in the industry) in 2007 alone. Indeed, from 1997 to 2007, the United States averaged 159 new banks a year.

To be sure, the number of banks has been falling for decades. Before the late 1970s, banks were prohibited from operating branches in most states, which inflated the number of unique banks in the country. States gradually did away with these unit banking laws in the 1970s and 1980s, a process that culminated on a national level with the Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994. The total number of banks has fallen by about 9,000 since the mid-1980s, as weaker banks merged with stronger ones. (See chart.) But there was always a steady influx of new banks to replace some of those lost — until now.

"It has been many years since anyone even talked to us about starting a new bank," says Wayne Whitham Jr., a lawyer in the Richmond office of the law firm Williams Mullen who has worked with banks and financial institutions since the early 1980s.

When it comes to de novos, the last seven years stand out in stark contrast to any time before. (See chart.) What can explain this trend, and what does it mean for the future of banking?

Keeping Up with Regulations

As in any industry, the decision to start a new bank involves weighing the expected costs and benefits. One of those costs is complying with regulations. While there is

no direct measure of the regulatory burden on banks, one possible proxy is the size of banks' quarterly financial report to regulators, known as the Call Report. According to a 2015 Dallas Fed article, Call Reports have grown an average of 10 pages each decade starting in the 1980s. But this pace seems to have accelerated since the financial crisis. From 2007 to 2015, the size of the Call Report jumped from about 50 pages to 84. Moreover, the Dallas Fed notes that the number and complexity of banking laws has grown steadily since 1970.

Longer and more complex regulations require more specialized personnel to interpret and ensure compliance. Thanks to economies of scale, large banks can devote more resources to this task than smaller banks but a smaller share of their workforce.

"In the case of a small community bank, there may have been one person who oversaw risk management and regulatory compliance in the past," says Pat Satterfield, the community bank relationship manager at Williams Mullen. "Now there might be five or six people in that same space." For a community bank with a small number of employees, that burden can be significant.

In a 2013 survey of about 200 small banks by the free-market-oriented Mercatus Center at George Mason University, most banks reported increased compliance costs, and more than a quarter of them said they anticipated hiring additional compliance personnel sometime in the next year. For the smallest institutions, hiring additional personnel dedicated to compliance rather than business can be a serious cost. According to estimates by the Minneapolis Fed, hiring just two additional people for compliance would make one in three banks with less than \$50 million in assets unprofitable.

This is especially relevant for new banks, most of which start out (and stay) small. According to the FDIC, more than 90 percent of banks in the United States had less than \$10 billion in assets. And between 2000 and 2008, 77 percent of newly chartered banks opened with less than \$1 billion in assets.

“Historically in a startup bank, people wore a lot of hats,” says Fred Green, president and CEO of the South Carolina Bankers Association and a former director of the Richmond Fed. “To start a bank today, you need dedicated human resources for compliance-related issues, which creates a higher fixed cost.”

New banks are already subject to higher capital requirements and more frequent examinations from the FDIC in their first years, adding to their fixed costs. But in 2009, the FDIC increased this window from three to seven years, noting that many of the banks that failed in 2008 and 2009 were less than seven years old. Requiring new banks to hold more capital may make them less prone to failure, but it also raises the barrier for them to get off the ground in the first place. Perhaps recognizing this, the FDIC returned the enhanced supervisory period back to three years in April. Announcing the decision, FDIC Chairman Martin Gruenberg said “the FDIC welcomes applications for deposit insurance.”

But not everyone in the banking community has found the process for starting a new bank entirely welcoming. Starting a new bank has never been easy. But organizers of the Bank of Bird-in-Hand reported a longer and more difficult application process than in years past. Other industry veterans also say there has been a shift following the financial crisis. Chip Mahan started his first bank in 1987 and his latest one, Live Oak Bank in Wilmington, N.C., 20 years later. “The two experiences could not have been more different,” he says. In the first case, he doesn’t even remember talking with the FDIC directly, while in the case of Live Oak, he had two meetings with Sheila Bair (then the head of the FDIC) to present his case.

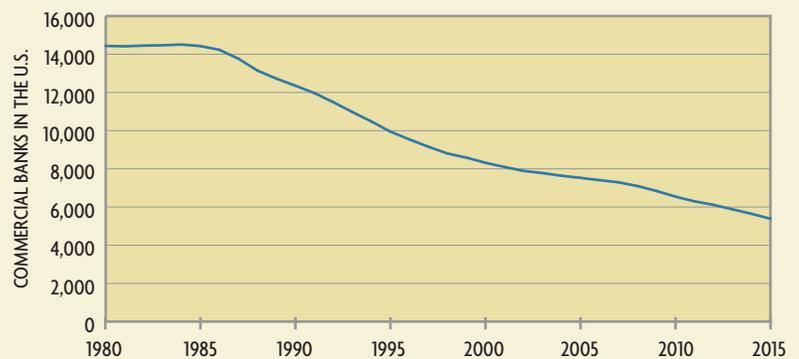
But regulations are only one piece of the puzzle. “Everyone likes to blame everything on the regulators,” says Mahan, “but that just doesn’t cut it.”

Low Rates, Low Profits

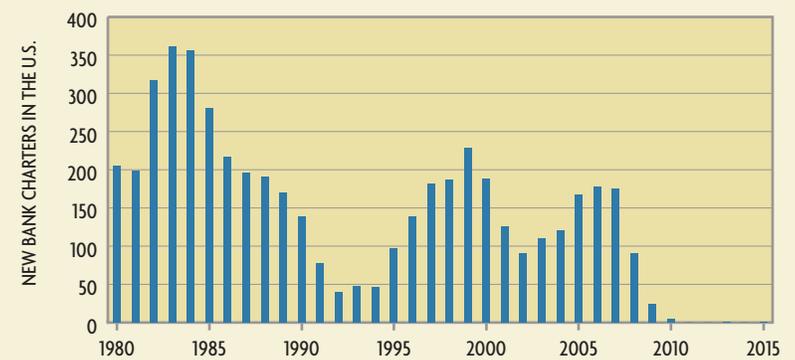
While new regulations can weigh on bank profits, bank organizers may be even more sensitive to changes in interest rates. According to the FDIC, community banks earn as much as 80 percent of their revenue in the form of net interest income, or the spread between the interest earned on loans and the interest paid to depositors. Near-zero interest rates since 2008 have made that spread less than in years past.

This not only puts pressure on existing banks but may also play a role in dissuading new bank formation. In a 2016 *Review of Industrial Organization* article, Robert Adams and Jacob Gramlich of the Federal Reserve Board of Governors found that new banks have historically held a much higher percentage of federal funds reserve deposits and earn even smaller interest spreads than both large and small incumbent banks. Perhaps in part because of this, the number of new bank charters has closely tracked the federal funds rate going back as far as the 1970s. Using an econometric

U.S. Banking Is Becoming More Concentrated



New Bank Formation Has Dried Up



SOURCE: Federal Deposit Insurance Corporation

model to analyze the data, Adams and Gramlich attribute at least 75 percent of the recent decline in new bank formation to nonregulatory factors like low interest rates and the weak economy. In a 2014 article in the Richmond Fed journal *Economic Quarterly*, however, former Richmond Fed researchers Roisin McCord and Edward S. Prescott noted that net interest income has been similarly low in previous recessions without a complete collapse in new bank entry. This would suggest that low interest rates, too, tell only part of the story.

Still, it is clear that even large, established banks have struggled to profit in the post-recession economy. Bank stocks lagged behind the rest of the market in the first quarter of 2016. In an effort to trim costs, Bank of America has cut more than 70,000 jobs since 2010 and announced another round of cuts in May. In this climate, organizers interested in starting a new bank may have difficulty finding investors who share their enthusiasm.

“In the old days, a lot of de novo banks had a five- or six-year plan: open, grow, and sell,” says Green. “Those sales prices were generally very attractive, something like two or more times the book value of the bank. You’re not going to see that today. So it’s hard to model a compelling reason for someone to invest in a new bank versus publicly traded companies that are already doing well.”

Mahan argues that new banks can still succeed, but they need to think outside the box. His bank has rejected the traditional community banking model of taking deposits

and making traditional loans. Instead, Live Oak built an online platform for making loans to specific businesses qualified for the U.S. Small Business Administration's 7(a) Loan Program. Live Oak's clients are an eclectic mix of industries, including dentists, veterinarians, and craft breweries. Mahan says his bank earns most of its profits from selling the loans it makes on the secondary market rather than relying on interest income.

"Following the traditional banking model with interest rates at an all-time low is a failed strategy," says Mahan. "You need to think of something a little bit different."

Why Care About Bank Entry?

Is there any reason to worry that there are far fewer new banks? Some have suggested it could matter for segments of the economy that have relied on traditional community banks.

Some economists have long thought that small banks may be better equipped to serve small businesses. Those firms have a difficult time obtaining funding because they typically do not have access to public equity markets and can struggle to signal their creditworthiness to lenders. To overcome this difficulty, small firms may depend on "relationship lending" with local banks. Lenders who build relationships with business owners and entrepreneurs in the community can use that information to supplement more formal means of assessing credit worthiness. In a 2002 article, Allen Berger of the University of South Carolina and Gregory Udell of Indiana University found that small banks are organizationally better equipped to engage in this sort of relationship lending than large banks.

"I firmly believe that community banks build better communities," says Jim Marshall, president and CEO of blueharbor bank in Mooresville, N.C. A third-generation community banker, Marshall values the ties between small banks and their community. Blueharbor maintains a presence in clubs, churches, and civic organizations in Mooresville, and Marshall sees these links as vital to serving local businesses. "Community banks try to find ways to mitigate any weaknesses that an entrepreneur might have, whereas the big banks tend to just look at a credit score."

If small businesses are primarily reliant on banks for funding, they may face troubling effects from the dearth of de novos. According to a 2014 working paper by Karen Mills and Brayden McCarthy of Harvard University, small-business owners surveyed by the National Federation of Independent Businesses reported tighter credit markets than before the financial crisis of 2007-2008.

Additionally, Marshall says regulations have increased the number of steps needed to process each new loan, making smaller loans less attractive for banks. "If you can process a \$100,000 loan one time versus processing 10 \$10,000 loans 10 times, and all carry the same expense to review and book, you'd rather have the \$100,000 loan," he says.

Another potential issue from the decline in bank entry comes from the fact that banking has become increasingly

concentrated at the top. Even before de novos started drying up, small banks were disappearing by the thousands. According to the FDIC, banks with fewer than \$100 million in assets account for virtually all of the decline in total banks since the 1980s. Over the same period, total assets held by the four largest banks grew from \$228 billion in 1984 (6.2 percent of industry assets) to \$6.1 trillion in 2011 (44.2 percent of industry assets). With no new banks entering the system, this consolidation seems likely to continue, if not accelerate.

True, industry consolidation can bring a number of benefits. Allowing more efficient firms to absorb less efficient ones can improve the profitability of the sector. Larger firms are often better able to take advantage of economies of scale, allowing them to offer cheaper services to their customers. But evidence on the benefits of consolidation in the banking sector has been mixed. While studies in the late 1990s and early 2000s found that consolidation improved bank profit and payment system efficiency, there was little evidence that consumers enjoyed many cost savings.

Changing Lending Landscape

There is also some evidence that the recent changes in banking may be part of a longer trend. Small banks have been facing greater competition for small business loans from large banks. According to a 2015 paper by Julapa Jagtiani of the Philadelphia Fed and Catharine Lemieux of the Chicago Fed, community banks held 77 percent of of loans worth less than \$1 million in 1997, but this share had fallen to 43 percent in 2015. For loans valued at less than \$100,000, the decline is even more dramatic, with the share held by community banks falling from 82 percent in 1997 to 29 percent in 2015.

To the extent that big banks are stepping in to provide loans to small businesses, policymakers may be less concerned about fewer community banks. In fact, in a 2013 paper updating his work on relationship lending, Berger, along with William Goulding of the Massachusetts Institute of Technology and Tara Rice of the Fed Board of Governors, found no evidence that small businesses actually prefer community banks for financing. The authors suggest that while small banks may have once enjoyed an advantage in this area, changes in technology (such as the adoption of credit scoring in some small-business lending) and the relaxation of branching restrictions have enabled large banks to more easily provide loans to local businesses.

On the other hand, there are signs that banks in general have been moving away from small-business lending. According to a 2013 paper by Ann Wiersch and Scott Shane of the Cleveland Fed, the share of banks' nonfarm, nonresidential loans worth less than \$1 million has fallen steadily from just above 50 percent in 1995 to less than 30 percent in 2012. Some of this decline more recently may be due to increased competition from nonbank online lenders. While their share of consumer lending is still small, it is growing: In 2014, these marketplace lenders equaled under

4 percent of traditional consumer lending, but by 2015 their share had jumped to more than 12 percent.

These many changes highlight the uncertainty of banking's future. Will new bank entry bounce back as interest rates eventually rise? And if it does, will those new banks look like the community banks of previous generations?

Marshall says blueharbor is sticking with the old model. "We're just a good old-fashioned, general consumer community bank. If we tried to specialize in any one thing, we wouldn't be serving our community," he says. At the same time, he recognizes the environment is changing. His daughter is studying banking and finance in

college (he hopes she will be the fourth-generation banker from his family), but he says many of the young bankers he meets or works with have expressed frustrations with current regulatory and economic conditions. "There are a lot of folks who say it's just not worth it to start a bank today," he says.

Mahan thinks the future is bright for new banks — if they're willing to adapt to changing consumer demands. "You've got to be focused on technology and deliver products and services with a beautiful user experience," he says. "Because at the end of the day, who wakes up and thinks about their bank?" **EF**

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WEB EXCLUSIVE: See sidebar "Opening Your Own Bank."

NUCLEAR REACTIONS *continued from page 17*

substantial cost savings from learning-by-doing. "It's not that there is no learning," he says. "It's just that it's hard because we are not building enough of these anywhere to really get down the cost curve — not in the United States, not in Asia, not in France, not anywhere."

Davis admits, however, that he is intrigued by the 20-plus nuclear reactors currently under construction in China. "It's a huge priority to figure out how China is able to do this," he says. In addition to lower labor costs, he suspects that the Chinese nuclear program benefits from a more favorable regulatory regime.

Settling the Bet

As of May 2016, Vogtle's projected cost per kilowatt of capacity was \$5,327 — well above Davis and Rothwell's over-under threshold of \$4,200.

So it appears Davis will win the bet. He also is sticking with the conclusion of his 2012 article: "In 1942, with a shoestring budget in an abandoned squash court at the University of Chicago, Enrico Fermi demonstrated that electricity

could be generated using a self-sustaining nuclear reaction. Seventy years later, the industry is still trying to demonstrate how this can be scaled up cheaply enough to compete with coal and natural gas."

Rothwell vehemently disagrees. "Nuclear power plants have an expected lifetime of 60 years. So even though there are low gas prices now, there is no reason to believe they will stay low for the next 60 years," he says. "And if you use standard discount rates, you make the value of electricity inconsequential from years 31 through 60. So if you are trying to provide for generations of consumers, then you have to come up with a way of valuing electricity for future generations."

As for the bet, Rothwell concedes that he *might* someday owe Davis \$20, but he's not quite ready give up the cash. "We still need to determine the 2007 overnight costs in 2007 dollars," he insists, "because it is likely that the \$5,327 value is in 'as-spent' dollars. We won't know until the plant is producing electricity, all the costs have been identified for the regulators, and the economists have analyzed the data. Let's not be hasty in our judgments. Our work is not yet done!" **EF**

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WEB EXCLUSIVE: See sidebar "Nuclear Power and Global Warming."

Erik Hurst

Editor's Note: *This is an abbreviated version of EF's conversation with Erik Hurst. For the full interview go to our website: www.richmondfed.org/publications*

When economic data appear in the media, they are generally discussed as national statistics; for instance, a given number of jobs were added across the country or the economy as a whole grew by a certain percentage during the past quarter. Those data can yield useful information, but they can also mask important regional variations and trends, argues Erik Hurst, an economist at the University of Chicago's Booth School of Business.

For instance, during the housing boom of the previous decade, employment was particularly strong in certain areas of the country, helping overall employment numbers and obscuring structural decline in employment in other areas of the country. As a result, when the Great Recession ended, it shouldn't necessarily have been a surprise that job growth would be relatively mild, because those areas that had boomed went back to their pre-boom trends while those that were in decline continued to struggle.

Hurst has used regional data in a series of papers to look at other macroeconomic phenomena that would be hard to examine using national data alone. He also has done important work on household financial behavior — including consumption and time use over people's life cycles — and on labor markets. Business startups have been another interest of his: Much has been written about the importance of entrepreneurship to the U.S. economy, but what, he has asked, actually motivates people to open their own businesses? In addition, in a recent paper, he and co-authors have attempted to quantify how much the decline in barriers to employment of women and minorities has contributed to economic growth. Among his current research interests is explaining the decline in labor force participation among prime working age males.

Hurst joined the Chicago faculty in 1999 after completing his Ph.D. He is currently co-editor of the *Journal of Political Economy* and serves on the board of editors of the *American Economic Review*. He is also a research associate at the National Bureau of Economic Research, where he is a member of the public economics, economics of aging, and the economic fluctuations and growth programs. Aaron Steelman interviewed Hurst in his office at Chicago in April 2016.



EF: Many people have an image of the typical entrepreneur in their head and it often includes a significant taste for risk and large long-term aspirations. What does your work on entrepreneurship suggest about that profile?

Hurst: In some ways, I'm perceived as the anti-John Haltiwanger when it comes to entrepreneurship. He and I are often on the same panels, and he's definitely seen as the glass half full guy and I'm definitely the glass half empty guy. But I think we both are right. His line is there's a huge amount of job growth that comes from these new small entrepreneurial businesses and that's very important to the dynamics of the U.S. economy, and I agree 100 percent. My line has always been essentially that most small businesses simply don't grow. But that doesn't mean those statements are necessarily inconsistent with each other.

Most small businesses are plumbers and dry cleaners and local shopkeepers and house painters. These are great and important occupations, but empirically essentially none of them grow. They start small and stay small well into their life cycle. A plumber often starts out by himself and then hires just one or two people. And when you ask them if they want to be big over time, they say no. That's not their ambition. This is important because a lot of our models assume businesses want to grow. Thinking most small businesses are like Google is not even close to being accurate. They are a tiny fraction.

My work with Ben Pugsley has been emphasizing the importance of nonpecuniary benefits to small-business formation. Because when you ask small-business people

what their favorite part of their job is, it's not making a lot of money. They do earn an income and they're very happy with it, but they get even more satisfaction from being their own boss and having flexibility and all of those other nonpecuniary benefits that come with being the median entrepreneur in the United States.

In our culture we seem to want to subsidize small businesses because it's the American dream. I think that could be fine, if you believe that there's a friction out there preventing some small businesses from starting or growing. But you might want to target that friction directly as opposed to targeting all small businesses generically. Ben and I have a recent paper in which we show in a simple model that if you subsidize all small businesses, in a world with nonpecuniary benefits being the big driver of small-business entry, the policy is highly regressive. Why? High-wealth people are already small-business owners because they can afford the nonpecuniary benefits that come with owning a small business. So in that world, we're basically just transferring money to high-wealth people when we subsidize small businesses overall, and that's something we need to consider.

EF: Income inequality has been a widely and hotly discussed issue recently. You have looked at a related issue that seems relevant to this discussion: the relationship between the wealth of parents and those of their children.

Hurst: There is a high correlation of parental wealth with child wealth — and it is very highly correlated at the tails of the distribution. That is, children of very low-wealth or very high-wealth parents rarely end up with wealth substantially different from their parents' wealth. This alone may not be surprising to a lot of people, but what may be surprising is that it is true above and beyond the correlation in their earned income and before bequests are received. We demonstrated that with data from the Panel Study on Income Dynamics. Subsequently, many people have used other and often better datasets to look at the issue, and they are coming up with roughly the same findings that we did.

So where is that residual coming from? Part of it is that people often marry people who are like them and they join their wealth. I also believe that saving propensities between parents and children are correlated and that they tend to allocate their portfolios similarly. That may be because children often have similar preferences as their parents, or it may be due to mimicking of behavior unrelated to preferences. I'm not certain which of the two is more important but it's an interesting question.

EF: If the marital sorting story is true and the importance of education to earnings is increasing, this may suggest

What the housing boom did was not only mask the secular decline in manufacturing and routine jobs in the economy, it has also somewhat altered the college attainment profile of people a decade later.

that we could expect additional stratification.

Hurst: I think there is a good chance of that. Many people find their mates at college or shortly afterward. And if people who are going to college still sort there or in the jobs they move into after college, there is going to be more

segmentation, with relatively higher-skilled people finding mates in one pool and relatively lower-skilled people finding mates in another. That is naturally going to propagate inequality, probably even more so than we have seen in the past.

EF: I would like to talk about your work on structural change in the labor market, including your paper on how the housing bubble masked the decline in manufacturing employment.

Hurst: The way I usually describe the paper, which I wrote with Kerwin Charles and Matt Notowidigdo, is to take two regions, Detroit and Las Vegas. Las Vegas has very little manufacturing relative to Detroit. Detroit didn't have a big housing boom but Las Vegas did. Now there are a whole bunch of different kind of stories about what caused that boom: low interest rates, extension of credit to subprime borrowers, and potentially bubble-like behavior in some places. When you look at this early 2000s period, if you focus only on Detroit, you see employment rates going down, particularly among prime-age workers. It looks like there was a structural decline in employment well before the recession ever started. When you look at Las Vegas during the boom, the employment rate was well above long-run local averages. Normally, most people in their 20s and 30s work, but some of them don't. During this period in Las Vegas, among lower-skilled workers in their 20s and 30s, nearly everybody was working. So when you put aggregate statistics together, when you sum together Detroit and Las Vegas, it looks like employment rates were relatively constant over this time period. But one was really low compared to historical levels, and one was really high relative to historical levels.

In this paper, we show that the decline in manufacturing that occurred during this period nationally — when you add in the Detroits, the Worcesters, and the Youngtowns — was masked by the aggregate housing boom in places like Las Vegas, Phoenix, south Florida, and some places in California that were growing well above average. Now one of these was temporary and one isn't. The housing boom we know busted and then employment in Las Vegas plummeted. If you look at 2010 or 2011, the employment rate in Las Vegas is roughly the same as it was in 2000, meaning it increased and went back to trend, where the old manufacturing centers just continued declining relative to their 2000 level. You have a very temporary boom-bust cycle overlaid with a structural decline, and what you get

is kind of a hockey stick pattern for the aggregate.

So for macroeconomists looking at the Great Recession, this is important for understanding why the employment rate hasn't bounced back to its 2007 level. It shouldn't have because 2007 wasn't a steady state. In terms of policy implications, this means that monetary policy arguably is not an especially effective tool for strengthening the labor market. Instead, I believe you need to focus on retraining workers or investing in skills in some form. You might also want to look at disability and some other government programs that might act as a drag on unemployment.

EF: In addition to decline in total manufacturing employment, the skills required to work in the modern manufacturing sector have changed a lot as well.

Hurst: They have. The new hiring that's going on in manufacturing is moving up the skill ladder more than it was before. Much more precision work is required now. My father was in manufacturing, and he would not be able to find a job in manufacturing as it is now. So I think the structural change in manufacturing has left some of these workers on the sideline. But I think this is true not only of manufacturing -- it's also true of many administrative and service jobs. In these areas, people have moved down the labor supply curve, wages have been relatively stagnant, and people have chosen to leave the labor force.

Something that I like to stress is that it is not demographics. The aging of the population explains a little bit of it. But all my work is looking at people in their prime age -- say early 20s through mid-50s. There is a structural problem for prime-age, lower-skilled workers in the economy. If you take a look at people with a four-year college degree, you can barely see the effects of the recession any longer. There's been no lasting effect on their employment rate. Almost all of the effect is concentrated among people with less than four-year college degrees.

EF: Given the wage premium associated with a four-year degree and the availability of education financing, it seems like a real puzzle why more people are not obtaining degrees.

Hurst: I have been thinking a lot about that. What is it that's causing so many young people, particularly young

Erik Hurst

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males, to not obtain skills required to be successful in today's workforce? I have been working with Mark Aguiar and Kerwin Charles and Mark Bills to try to understand what these people's lives look like. There's a budget constraint that still has to hold. They have to eat. What you're finding is that a lot of them are living in their parents' basements or their cousin's basement. So many are relying on family support. And a lot of them just aren't even working at all. So when you go and take a look at the fraction of people in their 20s who haven't worked in the prior 12 months in 2015, it's 20 percent for men with less than a four-year college degree. In 1990, that number was 4 percent. So the first thing we are doing is documenting these facts and trying to find out what their lives look like: how they're eating, what their living situations are like, what attachment they have to the labor force.

The second part we're trying to think about is why. What we are considering is whether it's possible that a leisure lifestyle is easier now

in your 20s than it was in the past. In 1980, if you were in your 20s and you weren't working, you were pretty isolated. You were sitting by yourself. You could watch a few channels on TV but no one else was out there. Now if you're not working, you could be online on social media or you could be playing videogames in an interactive way, things that make not working more attractive than before. And those videogames and leisure goods generally are relatively cheap compared to what they were in 1980. So when you're making your choice of working relative to your reservation wage, your reservation wage has gone up some because the outside option of not working is a lot more attractive. So that's what we're thinking but I don't know how we're going to test it.

Also, eventually these people will get older, of course, and many will have a spouse or kids. When that happens, their income requirements go up and they need jobs, but they probably haven't been building the type of skills required to get a job. So that's hard to understand. I have never written a paper before where people were myopic, but the behavior of a lot of people in their 20s now seems myopic.

EF: Getting back to the housing boom, you have looked at its effects on college attendance. What did you find?

Hurst: We've talked about the housing boom and how it masked some important trends in the labor market. I

want to see if it is possible that big housing booms could actually alter productivity going forward. One of the first steps in that is my paper, with Kerwin Charles and Matt Notowidigdo, on the effect of the housing boom on college attainment. College attainment rates for both men and women were relatively constant during the housing boom, which is different from the previous 50 years when they had been increasing. We argue that the housing boom may have caused some people not to accumulate human capital because of the labor market effects that we have talked about — meaning, in places like Las Vegas the housing boom created a lot of employment opportunities for lower-skilled people and raised the opportunity cost of attaining skills. Now, did those people go back to school when the housing bubble burst and the labor market weakened?

We can follow those people over time and ask: Did people who were in the labor market in their late teens and early 20s in Las Vegas in 2000 go back to college in 2010, when they were now about 30 instead of about 20? They didn't. It's not too surprising because 30-year-olds hardly ever go to college. So what the housing boom did was not only mask the secular decline in manufacturing and routine jobs in the economy, it has also somewhat altered the college attainment profile of people a decade later. There are now a lot of 30-year-olds with less schooling than they would have had otherwise, and we are going to be carrying around the legacy of the housing boom on formal college education going forward. To the extent that we believe a little bit of human capital makes people a little bit more productive, particularly in the labor market we're in now, this is going to be a cost.

EF: When economists analyze time use, something that doesn't seem quite clear is whether spending time with kids should be counted as home production or leisure.

Hurst: That's a hard question. If I have you raise my kids for me, I'm going to save some time. But there are certain kinds of utility flows that I could only get by being around my kids. What Jon Guryan, Melissa Kearney, and I show empirically in a paper from a few years ago is that if you look at the income gradient of how we spend our time, the richer you are, the less home production you do. But the richer you are, the more childcare you do. So that income gradient between home production and childcare has opposite signs, which tells me it's not exactly the same good. Whether that's coming from the utility you get from being with your kids or whether it's from investing in their human capital, that's hard to say. We know people from high-income families go to school more, go to the doctor more, and spend more time with their families. So how much of it is investment, how much of it is home production, how much is leisure, I don't know.

I have always advocated that you should have four uses of time — market work, home production, taking care of kids, and leisure — and then treat kids as somewhere between leisure and home production. So we tend not to put it in home

production when we measure it, but we don't put it in leisure either. We try to treat it as its own category.

EF: Could you describe the idea of endogenous gentrification you have developed with Veronica Guerrieri and Dan Hartley?

Hurst: I'm interested in housing markets, which are inherently an urban phenomenon. My work with Veronica and Dan has been to try to understand housing price variation within a city. Many urban models historically assumed that agglomeration benefits usually came from the firm side. Someone might want to be close to the center city, for instance, because most firms are located in the center city. So the spillover for the household was the commuting time to where the firms were, and the firms chose to locate near each other because of agglomeration benefits.

I have always been interested in it from another angle. When we all come together as individuals, we may create agglomeration forces that produce positive or negative consumption amenities. Thinking about it this way, when a lot of high-income people live together, maybe there are better schools because of peer effects or higher taxes. Or maybe there are more restaurants because restaurants are generally a luxury good. Or maybe there's less crime because there is an inverse relationship between neighborhood income and crime, which empirically seems to hold. So, while we value proximity to firms, that's not the only thing we value.

How important are these consumption amenities? And more importantly, how do these consumption amenities evolve over time, because usually in our urban models we assume that there's an amenity in a place and that amenity is relatively fixed? For instance, we like nice weather in Southern California and we hate bad weather in Rochester. Those amenities are relatively fixed. But in a world where amenities evolve over time, the composition of people in the neighborhood could then affect amenities, which then affects house prices and further affects the movement of people into and out of those neighborhoods. What we asked is: If a city experiences a housing demand shock, what types of neighborhoods appreciate the most? We found, as our model predicts, that gentrification spreads out from neighborhoods that are already gentrified — that poor neighborhoods on the border of rich neighborhoods experience the largest increase in house prices.

EF: As we know, women and blacks have faced substantial barriers to employment in the United States. In many ways, those barriers have become less significant. How much did they impede aggregate economic performance?

Hurst: In 1960, very few women and very few blacks were in higher-skilled professions. If we believe that at birth the propensity to be a good doctor in terms of our talent draw is equally distributed by gender and race, we should see relatively equal propensities, but we haven't, although

those propensities have converged dramatically between 1960 and today. So there are two questions we want to ask. One, what factors might have caused a wedge between people's occupational choices in 1960 and how might they have changed over time? Two, can those changes actually affect aggregate growth?

In a paper with Chang-Tai Hsieh, Chad Jones, and Pete Klenow, we use a Roy model to get at these issues. People are going to draw talent in a whole bunch of different occupations and, for the most part, the talent draws are going to be roughly similar between men and women and blacks and whites. We do allow for brawn-type occupations, where men might have a comparative advantage. Men might have been better construction workers in 1960, and that might have changed by 2008 because men and women can equally drive a forklift. But our assumption is that for most occupations, people's talent draws are the same.

So why would men and women and blacks and whites differ from each other in their occupational choice? We have a few types of wedges. One is discrimination in the labor market. Women and blacks were discriminated against being, say, doctors in 1960, and that discrimination has changed over time. Partners in a medical practice, as well as their customers, are now less likely to see women and blacks as being unable to provide identical services as men and whites. Second are barriers to human capital accumulation among women and blacks. Those explicit and implicit barriers are things like segregation or underinvestment in schools in black neighborhoods, prohibitions on entry of women to certain professional schools, or social norms that steer women toward some occupations and away from others. Third are preferences. Perhaps women and blacks opted out of going into certain professions because of social norms, and they were willing to take a utility loss to not run up against those norms. Fourth are factors that affect home production and have increased labor market flexibility for women over time. This would include labor-saving devices such as dishwashers and washing machines as well as improved methods of birth control that permit greater control over fertility decisions.

So we have these barriers and we want to distinguish among those to see how much of the occupation choice differences in 1960, 1970, 1980, and so on are due to these barriers — and as a result, how much does the decline of those barriers contribute to economic growth.

We find that about 30 percent of growth in the United States between 1960 and 2010 is due to declining labor market barriers for blacks and women across those four areas. That's a big chunk of growth, and most of it is due to increasing participation of women simply because there are many more women than blacks in the population and the labor force. And for women, almost all of it is due to changing barriers to human capital. For black men, it's about half discrimination in the labor market and half human capital barriers. For black women, human capital barriers play a larger role than discrimination.

Now, there is still progress to be made in these areas,

which will yield gains. But there is good reason to think that many of those wedges have lessened substantially, and if that's the case, the United States is not going to experience the type of growth that it did since 1960.

EF: What are you working on now?

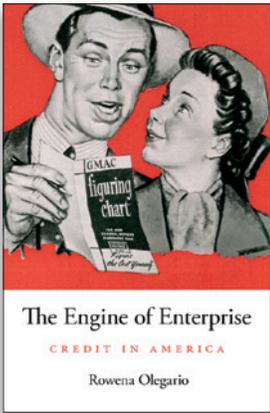
Hurst: I think the question about why labor force participation is so low among people who are of prime working age is really interesting and I want to investigate that. Another issue I am examining is wage stickiness. I'm going to try to get administrative data from a payroll-processing company to try to measure wages and hours for a large section of the economy and then ask: How sticky are wages? Or how sticky were wages during the recession? I sort of want to do for wages what Mark Bilal and Pete Klenow did for prices. Part of the reason this has been hard to answer is we don't have really good administrative data on wages; we have good administrative data on earnings, but all the fluctuations in earnings could be due to hours. So we need to isolate how much people's earnings are due to firms changing wages and how much of it is due to people or firms changing hours. We don't know the answer to that. But having actual payroll data would allow us to separate the wage and the earnings parts. From there, you could ask a lot of interesting regional questions, such as: Were wages stickier in Las Vegas, where there was a big labor boom, or were they just as sticky in Dallas?

EF: Which economists have influenced you the most?

Hurst: The three people I try to keep in my mind all the time are Gary Becker, Kevin Murphy, and Bob Hall. If I could be a fraction of those three combined as I get older, that would be wonderful. They always start with economic theory, pretty straightforward price theory, and then go to the data, Kevin and Bob particularly, and test their theories without using overly fancy tools. They are true empiricists in the best sense. Plus, they all just love economics and that comes through in their work.

Bob will strongly believe in X today, and if tomorrow somebody shows him a piece of evidence that it's not quite X but it's X prime instead, he moves with that as well. I love that fluidity as a scientist. It's not like he has a stake in the race; he just wants to know the truth. He's also well into his life cycle and still producing at the frontier, just as Gary did. I'm with Bob sometimes and he still gets irritated when he has a paper rejected. I want to be 72 and still get irritated when I'm rejected.

Also, all three of them were so generous with their time with me. When I got to Chicago, I was working on discrimination issues, such as wealth gaps between blacks and whites. I had been on campus probably just a month or two and emailed Gary and spent an hour and 15 minutes talking about a paper of mine. I hope to be that generous with junior faculty as I move along in my career as well. **EF**



**THE ENGINE OF ENTERPRISE:
CREDIT IN AMERICA**

BY ROWENA OLEGARIO
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REVIEWED BY DAVID A. PRICE

“We owe more to credit and to commercial confidence than any nation which ever existed,” Sen. Daniel Webster told his fellow senators in an 1888 speech. He noted that credit had “covered the seas with our commerce” and “excited and stimulated our manufacturing industry, encouraged labor to put forth the whole strength of its sinews, felled the forests, and multiplied our numbers, and augmented our national wealth, so far beyond all example as to leave us a phenomenon for older nations to look at with wonder.”

Debates over the role of credit in America’s economic growth — and in its occasional crises — date back to the country’s founding period. On the “pro” side stood Treasury secretary and future Broadway hero Alexander Hamilton, among others, who regarded credit as essential to the young country’s development. On the skeptical side was Thomas Jefferson, wary of financiers becoming excessively powerful and warning of an immiserating effect of debt.

This division in the thought of early Americans is the starting point of Rowena Olegario’s *The Engine of Enterprise*, billed as “the story of credit from colonial times to the present.” Olegario, a senior research fellow at Oxford University, considers that history starting with the germination of American commercial credit through the mid-19th century and ending with the democratization of credit and what she calls the “erosion of credit standards” from the 1980s to the early 2000s.

For a scholarly book from an academic press, *The Engine of Enterprise* is atypical in that it presents neither an overarching thesis nor original research; apart from a few colonial-era sources, it is a synthesis of existing modern literature. Moreover, because its narrative is strictly chronological, the reader wishing to attempt a synthesis of a particular topic on his own — the evolution of bankruptcy policy, say, or of trade credit — must pull together material from widely scattered pages.

Still, the book offers a competently written account of milestones in the history of U.S. credit markets and products. An area of strength is its account of the rise of consumer credit from the 1920s to the 1970s. For the spurring of this rise, Olegario assigns a central role to secured installment credit, which made durable goods such as autos and appliances more accessible to the middle class. General Motors used installment credit as a source of competitive advantage against Henry Ford starting in 1919, when it created

BOOKREVIEW

Credit History

its captive finance company, General Motors Acceptance Corp. (GMAC), to offer credit directly to its new-car customers. (In contrast, Ford customers who wished to buy on credit had to work with sometimes-sketchy local finance companies.) In the long run, Olegario concludes, GMAC stimulated the growth of installment credit “by helping make installment purchases the norm.”

Another revolution in consumer lending came in the 1970s with the entry of bank credit cards into the mainstream. While the cards had antecedents going back to the early part of the century — Western Union cards, gas station cards, and, later, store cards — the emergence of bank-issued cards like today’s Visa and MasterCard was punctuated at first by expensive failures. Once the issuers figured out how to market the cards, price the credit, and manage fraud, however, the cards’ growth was rapid; from 1970 to 1977, penetration more than doubled from 16 percent of households to 35 percent. Helping the cause of the issuers was a 1978 U.S. Supreme Court decision that, in effect, enabled them to bypass state usury laws.

One theme that Olegario could have teased out of her material, but leaves implicit, is the role of information in the evolution of American credit markets and of Americans’ financial affairs. In the colonial period, as she recounts, business credit was based on the lender’s personal knowledge of a trading partner’s circumstances and past behavior. In the 19th century, while direct knowledge continued to be important, credit-reporting agencies began to field networks of credit reporters — Abraham Lincoln, in his days as a lawyer, was one of them — to provide information to out-of-town creditors. Consumer credit bureaus followed later in the century.

In the 1960s, the scale of credit-reporting services plus advances in technology combined to make computerized credit reporting cost-effective. The real upheaval, however, came with the next step: the widespread adoption of credit scoring — using an algorithm to analyze a borrower’s credit risk using information in his or her credit file and expressing the results as a number. This expansion in the information available to creditors helped enable a rapid increase in credit available to consumers and, ultimately, skyrocketing consumer debt from the early 1980s to the early 2000s. (See “Credit Scoring and the Revolution in Debt,” *Econ Focus*, Fourth Quarter 2013.)

Although *The Engine of Enterprise* does not try to change the reader’s way of thinking about credit and its history, it is a useful resource for those seeking a quick path into the historical literature on topics ranging from pawnbrokers to mortgage lending, from corporate debt to student loans. For policymakers and academics involved with financial regulation, an understanding of this history will only become more important in coming years. **EF**

Paying for World War I: The Creation of the Liberty Bond

BY RICHARD SUTCH

Editor's Note: A version of this article first appeared on the Federal Reserve History website, www.federalreservehistory.org. The author is the Edward A. Dickson Distinguished Emeritus Professor of Economics at the University of California, Riverside and a visiting scholar at UC Berkeley.

World War I began in Europe in 1914, the same year the Federal Reserve System was established. During the three years it took for the United States to enter the conflict, the Fed had completed its organization and was in a position to play a key role in the war effort. Wars are expensive and, like every governmental effort, they have to be financed through some combination of taxation, borrowing, and the expedience of printing money. For this war, the federal government relied on a mix of one-third new taxes and two-thirds borrowing from the general population. Very little new money was created. The borrowing effort was called the “Liberty Loan” and was made operational through the sale of Liberty Bonds. These securities were issued by the Treasury, but the Fed and its member banks conducted the bond sales.

Generally speaking, the secretary of the Treasury proposes a funding plan for war financing and works with Congress to enact the necessary legislation, while the Fed operates with considerable independence from both the executive and legislative branches of government. But World War I was different. The Treasury and the Fed, united under one leader, worked together in both the creation of the financial war plan and its execution.

Rejecting Printing-Press Finance

When the United States entered World War I in 1917, it became immediately evident that an unprecedented effort would be required to divert the nation’s industrial capacity away from meeting consumer demand and toward fulfilling the needs of the military. At the time of

the congressional declaration of war, the American economy was operating at full capacity, so the requirements of the war effort could not be met by putting underutilized resources to work. William Gibbs McAdoo, secretary of the Treasury and chairman of the Fed’s Board of Governors, understood that the wartime population would have to sacrifice to pay the bill. Shortly after war had been declared, he delivered a speech that he later recorded for posterity:

“We must be willing to give up something of personal convenience, something of personal comfort, something of our treasure — all, if necessary, and our lives in the bargain, to support our noble sons who go out to die for us.”

But the question remained: How would the shift in output be arranged? How should the war be paid for? There were three possibilities: taxation, borrowing, and printing money.

For McAdoo, printing money was off the table. The experience with issuing “greenbacks” during the Civil War suggested that fiat money would generate inflation, which he thought would lower morale and damage the reputation of the newly issued paper currency, the Federal Reserve Note. McAdoo also opposed printing money because it would hide the costs of war rather than keeping the public engaged and committed. “Any great war must necessarily be a popular movement,” he thought, “... a kind of crusade.”

McAdoo chose a mix of taxation and the sale of war bonds. The original idea was to finance the war with an equal division between taxation and borrowing. Taxation would work directly and transparently to reduce consumption. Taxes are compulsory, and those who must pay are left with less purchasing power. Their expenditures will fall, freeing productive resources (labor, machines, factories, and raw materials) to be employed in support of the war. Another advantage of taxation was

World War I poster depicting Lady Liberty



that Congress could set the rate schedule to target those they thought should bear the greatest burden. President Woodrow Wilson and the Democrats in Congress insisted on a sharply progressive schedule — taxing those with very high incomes at higher rates than the middle class and exempting the poor. The highest marginal rate eventually reached 77 percent on incomes over \$1 million.

Accompanying the personal income tax was an increase in the corporate income tax, an entirely new “excess-profits tax,” and excise taxes on such “luxuries” as automobiles, motorcycles, pleasure boats, musical instruments, talking machines, picture frames, jewelry, cameras, riding habits, playing cards, perfumes, cosmetics, silk stockings, proprietary medicines, candy, and chewing gum. These taxes ranged from 3 percent on chewing gum and toilet soap to 100 percent on brass knuckles and double-edged dirk knives. A graduated estate tax on the transfer of wealth at death exempted the first \$50,000 and rose progressively thereafter from 1 percent to 25 percent.

Roots of the Liberty Bonds

Some of the prominent economists of the day suggested that the war should be paid for entirely through taxes, but McAdoo disagreed on grounds that the eventual cost of war was unknown at the outset. If the tax generated less money than was required, rates would have to be raised again and perhaps repeatedly. Furthermore, changing tax schedules always requires a controversial, complex, and drawn-out political debate. Indeed, as the estimated cost of the war effort escalated, McAdoo came to the conclusion that, despite the high rates, tax revenues would not cover anything like one-half the cost. Given the commitment to the progressive structure of rates, taxation had reached its acceptable limit. The revised goal was one-third from taxes and two-thirds from borrowing.

Financing a war by borrowing need not be inflationary if the public diverts income away from consumption to purchase bonds. Higher saving as a share of income would necessarily mean lower consumption. Such a change in saving behavior, however, would be difficult to engineer and far from certain. A high rate of return on the war bonds would be unlikely to work. High rates might tempt some to take momentary advantage and save more. But there is also an opposite effect. With high interest rates, a household’s wealth would accumulate more rapidly. With that mechanism working on behalf of the saver, less saving from current income would be required to ultimately reach a target level of wealth. The two opposite tendencies would tend to cancel each other. Another problem with offering a high interest rate on the war bonds is that it might divert funding away from investments in physical capital when the war effort warranted an increase in productive capacity.

It is unclear if McAdoo understood that offering high rates of interest would not work. In any case, he was opposed to high rates because that would be a sign of weakness and would reward the rich — the very group the

Any great war must necessarily be a popular movement. It is a kind of crusade; and like all crusades, it sweeps along on a powerful stream of romanticism.

— William Gibbs McAdoo

income tax was designed to target. He chose to keep the interest rates competitive with the current return on comparable assets. To many observers, a massive bond sale on these terms seemed to be an imprudent gamble. The worry expressed by bankers and bond dealers at the time was unanimous: The bonds might not sell without the promise of an extra-attractive return. Moreover, the critics pointed out, only a few Americans had any direct knowledge about bonds, and fewer still actually owned any.

It was at this point that McAdoo conceived of the Liberty Loan plan. It had three elements. First, the public would be educated about bonds, the causes and objectives of the war, and the financial power of the country. McAdoo chose to call the securities “Liberty Bonds” as part of this educational effort. Second, the government would appeal to patriotism and ask everyone — from schoolchildren to millionaires — to do their part by reducing consumption and purchasing bonds. Third, the entire effort would rely upon volunteer labor, thereby avoiding the money market, brokerage commissions, or a paid sales force. The Federal Reserve Banks would coordinate and manage sales, while the bonds could be purchased at any bank that was a member of the Federal Reserve System.

Packaging the Bonds

To the war planners, the appeal of borrowing funds from the public was that it would be good for morale. Individuals could demonstrate their support for the war by purchasing bonds. Indeed, during the bond campaigns, purchasers were given buttons to wear and window stickers to display, thus advertising their patriotism. If bond sales were strong, if the offering was oversubscribed, that would demonstrate American resolve.

Yet there was a risk. Poor sales would be a sign of weak support and insufficient patriotism. To avoid a failure to sell the entire bond issue, the government arranged to sell them in a series of brief but intense campaigns by subscription. The first campaign was announced on April 28, 1917 — 22 days after the declaration of war. The first offering of bonds was to be for \$2 billion and promising a 3.5 percent rate of return. That was slightly below the rate paid by savings banks on customers’ deposits (which ranged between 3.5 percent and 4 percent) or the yield on high-grade municipal bonds (3.9 percent to 4.2 percent). The fear was that individuals with pre-existing savings accounts or municipal bond holdings would use those funds to purchase Liberty Bonds if the bonds’



1917 \$50 First Converted Liberty Loan

promised return was greater than what a savings account was earning. Such a rearrangement of portfolios would not have increased saving or reduced consumption. McAdoo also knew that financial institutions would resist mightily any competition for their deposits from the government.

The bonds were negotiable, with coupons cashable every six months. Although their term was 30 years, they were callable after 15. The lowest denomination available was \$50. This, it seemed to some, would put them out of reach for the general public. The average compensation of a production worker in manufacturing was approximately 35 cents per hour at the time. Fifty dollars would require two weeks of wages. But there was an obstacle to issuing lower denominations: The government did not want to deal with the administrative cost of tracking ownership, so it designated Liberty Bonds as “bearer bonds.” These are securities that belong to whoever is holding them at the time rather than one registered owner. Had bearer bonds been issued in small denominations, they could be used like currency to purchase goods, thereby defeating McAdoo’s reason for refusing to print money. They would be money.

McAdoo found another way to make the bonds affordable. He introduced an installment plan. Even the poorest could purchase “War Thrift Stamps,” which cost only 25 cents. The Treasury Department called them “little baby bonds,” and like the Liberty Bonds, they earned interest. The stamps were pasted on a card until 16 had been collected, at which point they were exchanged for a \$5 stamp called a “War Savings Stamp.” These were affixed to a “War Savings Certificate,” which also earned interest. When 10 \$5 stamps

were collected, the certificate could be exchanged for a \$50 Liberty Bond. The key to this scheme was that the certificate was registered to its owner and could be cashed only by the person whose name was inscribed on the certificate. That made the certificate non-negotiable.

Rallying the Public

Fears of inadequate demand were proved unwarranted. The first loan was oversubscribed by 50 percent, with more than 4 million subscribers accepted. Nationally, that would represent about one in every six households. Subscribers for the smallest amounts were given priority. Large subscribers were rationed. According to the *New York Times*, John D. Rockefeller, who pledged \$15 million, was allotted only “something over \$3 million.” Fifty percent of the bonds sold were for the lowest face value, \$50; another one-third of those sold were for the \$100 bond.

In all, there were four Liberty Loan drives initiated during the war and a fifth “Victory Loan” announced after the armistice. The second Liberty Loan, for \$3 billion, was open for six weeks and concluded on Nov. 15, 1917. The third and fourth drives were each about a month long in April (\$3 billion) and October (\$6 billion) of 1918. Because interest rates on alternative assets had risen, the rates on the subsequent loans were increased to keep them competitive, to 4 percent on the second loan and 4.25 percent on the third and fourth. All five campaigns were oversubscribed. Purchasers of the first 3.5 percent bonds could exchange their securities for the new higher-yielding bonds.

The loan drives were the subject of the greatest advertising effort ever conducted. The first drive in May 1917 used 11,000 billboards and streetcar ads in 3,200 cities, all donated. During the second drive, 60,000 women were recruited to sell bonds. This volunteer army stationed women at factory gates to distribute 7 million fliers on Liberty Day. The mail-order houses of Montgomery Ward and Sears-Roebuck mailed 2 million information sheets to farm women. “Enthusiastic” librarians inserted 4.5 million Liberty Loan reminder cards in public library books in 1,500 libraries. Celebrities were recruited. Charlie Chaplin, Mary Pickford, and Douglas Fairbanks, certainly among the most famous personalities in America, toured the country holding bond rallies attended by thousands.

This elaborate effort was conducted by a home-grown propaganda ministry called the “Committee on Public Information.” The propaganda campaign was essential, not just to sell bonds, but to sell the war. Public sentiment before 1917 was not only against American involvement in the war, but it was not even united on which European military to root for. Running for re-election in 1916, Wilson had adopted the campaign slogan “He kept us out of war,” and he pushed his argument for noninvolvement relentlessly. Wilson’s Republican opponent, Charles Evans Hughes, was also for peace. So, not surprisingly, his administration needed a major campaign to convince the public of the necessity and the legitimacy of military action against Germany. This was a

challenge because American involvement was not predicated on a desire for territory or revenge but on an intangible ideal. When asking for war on April 2, 1917, Wilson framed the war's objective: "The world must be made safe for democracy."

For the task of molding public opinion, Wilson turned to an investigative journalist, George Creel, who staffed the Committee on Public Information with psychologists, fellow journalists, artists, and advertising designers. The committee developed many of the techniques now associated with modern advertising. The magazine illustrator Howard Chandler Christy drew Liberty as an attractive young woman dressed in a see-through gown cheering on the troops. The man now regarded as the "father of public relations," Edward Bernays, also worked for Creel, pioneering the techniques of manipulating and managing public opinion based on the theories of mass psychology. The committee appealed to innate motives: the competitive (which city would buy the most bonds), the familial ("My daddy bought a bond. Did yours?"), guilt ("If you can't enlist, invest"), fear ("Keep German bombs out of your home"), revenge ("Swat the Brutes with Liberty Bonds"), social image ("Where is your Liberty Bond button?"), gregariousness ("Now! All together"), the impulse to follow the leader (President Wilson and Secretary McAdoo), herd instincts, maternal instincts, and — yes — sex. Bernays's uncle was Sigmund Freud.

A Gamble Pays Off

By war's end, after four drives, 20 million individuals had bought bonds — impressive given that there were only 24 million households at the time. More than \$17 billion had been raised. In addition, the taxes collected amounted to \$8.8 billion. Almost exactly two-thirds of the war funds came from bonds and one-third from taxes. This was a time when \$17 billion was an almost unthinkable large number; an equal share of gross domestic product today would amount to \$3.6 trillion. Most of McAdoo's bonds were purchased by the public, 62 percent of the value sold by one estimate. A government survey of almost 13,000 urban wage-earners conducted in 1918 and 1919 indicated that 68 percent owned Liberty Bonds. It seems undeniable that the emotional



Charlie Chaplin and Douglas Fairbanks at a Liberty Bond rally, 1918.

advertising campaign effectively produced a broad and strong desire to do one's part for the war effort by participating in this way. After the war, McAdoo's assistant in fiscal matters, Assistant Secretary Russell Leffingwell, described the loan campaigns "as the most magnificent economic achievement of any people. ... the actual achievement of 100,000,000 united people inspired by the finest and purest patriotism."

McAdoo had taken a gamble when he depended on faith that Americans could be induced to save more heavily than they would otherwise. He won that gamble. Saving rates shot up during the war and then returned close to their prewar levels following the end of hostilities. Consumption as a percent of personal income fell during the war, by roughly 10 percentage points. McAdoo's faith in and reliance upon borrowing during a time of emergency proved the value of deficit spending and emboldened those who later advocated fiscal policy to fight business recessions and unemployment. McAdoo's belief that public opinion could be changed and mobilized to provide the will and the way to achieve great things provides a continuing foundation for an optimistic, progressive, and democratic view of our free-market capitalist economy. **EF**

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Measuring Income Inequality and Economic Mobility

BY ANN MACHERAS

Measures of income inequality and economic mobility have been gaining the public's and policymakers' attention in recent years. This is due, in part, to a long-run trend of increasing income inequality in the United States since 1979. According to recent data from the Congressional Budget Office (CBO), after-tax average household income for the poorest 20 percent of the population grew by 46 percent from 1979 to 2013, while the middle 60 percent saw a gain of only 41 percent over this period. The trend is even more striking with regard to the so-called "1 percent": From 1979 to 2013, the CBO reported growth in household income of 192 percent for the top 1 percent of households.

It seems likely that the fast growth of income accruing to the top 1 percent of households has sharpened the focus on income inequality. These figures do not necessarily translate into impoverishment for those at the lower end, however: Despite the growing disparity in income among households, average household income, adjusted for inflation, has grown across all of the commonly reported income groups reported by the CBO analysis.

The interest in income inequality may also stem from more recent economic trends that have included relatively healthy growth in employment accompanied by only modest gains in average wages. For example, while employment has grown an average of 1.6 percent nationally per year from 2010 to 2015, real wages have grown by only 0.8 percent over the same period. (See "Will America Get a Raise?" p. 10.) These trends are particularly important because labor income accounts for a larger share of income for households in the middle 60 percent of the distribution, ranging from 75 to 82 percent of average market income (that is, income from sources other than government transfer programs). In contrast, the poorest one-fifth of households earned 66 percent, and the richest one-fifth earned 65 percent, of their income as labor income in 2013.

Measuring Income Inequality

Assessing the changes in income distribution in the nation, or in states or metro areas, starts with an understanding of how the different government data sources define income. Common data sources include statistics drawn from tax return data available from the Internal Revenue Service (IRS), the U.S. Census Bureau's "money income" series, and estimates from the CBO — but there are important differences.

Starting with the narrowest definition, the IRS measures pretax income derived from federal tax return data. While these data have the advantage of more complete coverage for the highest-income households, and therefore are favored for reviewing trends of the top 1 percent,

they suffer from the exclusion of important government transfers and under-representation at the bottom of the distribution because many families are not required to file tax returns. The Census data include pretax household income plus government cash transfers such as Social Security, unemployment insurance, and cash public assistance. These additional elements of income tend to disproportionately benefit households at the lower end of the distribution. Finally, the broadest measure is the net after-tax income data provided by the CBO, which use more detailed tax record information combined with demographic characteristics and income data from the Census, but also include government transfers as well as capital gains income and some imputed noncash sources of income, and subtract direct and indirect federal taxes. These different measures can generate somewhat different conclusions about the trends in income inequality — for the magnitude of change, if not the direction.

The standard measure of income inequality is the Gini index (sometimes called the Gini coefficient). The Gini index, developed in the early 20th century by Corrado Gini, summarizes the entire distribution of income in a single metric ranging from zero to one. A Gini index of zero would result if income were distributed equally across all groups, while a value of one indicates that all of the income is received by the highest-income group, with none going to the lower-income groups. This metric can be used to compare a single region over time or to compare geographic units such as states or countries.

The Gini index calculated from the CBO's broader definition of net after-tax income is lower than the same index based on before-tax income. Even so, the trend over time is very similar between the different measures. In 1979, the Gini index based on after-tax income was 0.36, but by 2013, it had risen to 0.44. The effect of government transfers and the progressivity of the federal tax system help to reduce income inequality. The Gini index on market income, which excludes these effects, was 0.60 in 2013. This higher value (more unequal distribution of income) is similar to estimates that economists have generated on pretax measures of income derived from federal income tax return data. (See chart.)

Another way to determine how the distribution of income is changing is to examine directly the shares of income going to equally sized groups of households. Typically, the data are reported for quintiles of households, where households are ranked from lowest to highest household income. The lower quintile represents the poorest 20 percent of households, while the highest quintile represents the richest 20 percent of households. This view of the data from the CBO also offers additional detail on the top quintile, including a breakout of the top 1 percent.

While the somewhat narrower definition of income used by the Census also provides income shares by quintiles and the top 5 percent, it does not have enough detail at the higher end to report on the top 1 percent of the distribution. The 95/20 percentile ratio, however, is often used to describe how far the top 95 percent of the income distribution is from the lower quintile. In the most recent data for 2014, this ratio was 9.64, meaning that the income at the 95th percentile was 9.64 times the income at the 20th percentile. In 1979, it was markedly lower, at 6.69, reflecting the fact that household income rose faster from 1979 to 2014 for households in the 95th percentile than it did for the lower quintile of the household income distribution.

Measuring Economic Mobility

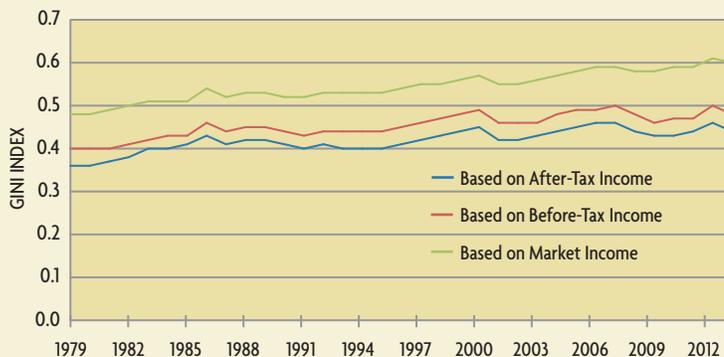
While the income distribution in any given year is a snapshot in time, generally we think of economic mobility as the opportunity to move along the income ladder, either in one's own life or across generations. The Richmond Fed's 2012 *Annual Report* featured an essay by Kartik Athreya and Jessie Romero on economic mobility that suggested that for most people, mobility depends on opportunities to obtain human capital. Individuals have differing abilities and preferences that may ultimately determine their outcomes, however, making it problematic to equate equality of outcomes with equality of opportunity.

As with income inequality, economic mobility can be measured in various ways. The data required to measure economic mobility present some challenges, as individuals need to be tracked over time. *Intragenerational* mobility measures the movement of an individual along the income distribution during his or her own lifetime. Income typically rises through the prime working-age years and then declines during retirement, but positive and negative shocks can occur as well. *Intergenerational* mobility, perhaps a more interesting view, compares the outcome of an individual with the outcome of his or her parents at the same stage of life (say 40 years of age). Intergenerational mobility can be measured either in absolute terms — does the child earn a higher income than his or her parent did at the same age? — or in relative terms — is the child's income rank higher than that of his or her parent?

In absolute terms, most people have been upwardly mobile compared to their parents. The Economic Mobility Project (Pew Charitable Trusts) reported in their 2012 analysis of the Panel Study of Income Dynamics that 84 percent of U.S. adults earned a higher family income than their parents at a comparable age. The study compared parents' income, measured from 1967 to 1971, to the income of their children, who were tracked into adulthood to an average age of 45 during the period from 2000 to 2008.

More recent research has focused on relative intergenerational income mobility. Intergenerational mobility trends can be presented in several ways. A standard approach is to

Gini Indexes Based on Market, Before-Tax, and After-Tax Income, 1979 to 2013



SOURCE: Congressional Budget Office

sort children and their parents into their respective income quintiles and to plot the results into what is termed a social mobility transition matrix. The intergenerational elasticity of earnings (IGE) is another commonly used form of analysis, resulting in a single summary metric that can be used for comparison across time, across demographic characteristics, or across geographies. The IGE estimates the relationship between parental and child incomes around age 35 or 40 and describes, in percentage terms, how much of the difference in earnings in one generation persists into the next generation. A smaller IGE suggests less persistence in inequality and greater mobility. Estimates have found that the United States has relatively low economic mobility compared to other countries, with an IGE around 0.5 or 0.6 compared to 0.2 to 0.3 for Canada and some of the Nordic countries. In addition, studies suggest that intergenerational mobility declined in the United States between 1980 and 1990 and has since been fairly constant.

Trends in Income Inequality and Economic Mobility

The relationship between income inequality and economic mobility has sparked debate among economists. There appears to be a negative correlation between income inequality, represented by the Gini index, and economic mobility, as measured by the IGE, when comparing countries. This relationship was dubbed the "Great Gatsby" curve in a 2012 speech by Alan Krueger, who used the correlation to sound an alarm about the prospects for deteriorating economic mobility in the future given that income inequality has worsened in recent decades and economic mobility outcomes for the next generation will not be known for some time.

Of course, correlation between income inequality and economic mobility does not imply causality; there are a host of other potential factors influencing economic mobility, including family structure and investments in early education. New research being conducted by the Brookings Institution (in partnership with the Urban Institute and Child Trends) is using a model called the Social Genome Model (SGM) to focus on the dynamic movement from one stage of life to the next. An important feature of the model is that it allows for simulations of policy interventions at any stage so that

Rank State Gini Index

Fifth District Income Inequality	Gini Index	Gini Index Rank	Lowest Quintile Share of Income (%)	Highest Quintile Share of Income (%)
Maryland	0.449	13	3.5	48.4
West Virginia	0.455	19	3.5	49.0
Virginia	0.466	27	3.2	50.0
South Carolina	0.469	32	3.3	50.3
North Carolina	0.475	35	3.3	51.1
District of Columbia	0.522	51	1.8	54.3
United States	0.480		3.1	51.4

SOURCE: U.S. Census, American Community Survey, 2014 1-year estimates

Rank Fifth District MSA Gini Index

Fifth District Income Inequality Metropolitan Areas	Gini Index	Gini Index Rank	Lowest Quintile Share of Income (%)	Highest Quintile Share of Income (%)
<i>Lowest degree of inequality:</i>				
New Bern, NC	0.412	18	4.7	45.9
California-Lexington Park, MD	0.414	20	3.6	45.2
Staunton-Waynesboro, VA	0.416	25	3.9	45.4
Hagerstown-Martinsburg, MD-WV	0.423	36	4.1	46.4
Harrisonburg, VA	0.427	48	3.8	46.7
<i>Greatest degree of inequality:</i>				
Wilmington, NC	0.487	342	3.0	51.9
Morgantown, WV	0.493	356	2.3	52.1
Charlottesville, VA	0.496	361	2.6	52.7
Greenville, NC	0.501	366	2.6	52.8
Durham-Chapel Hill, NC	0.502	367	2.9	53.7

SOURCE: U.S. Census, American Community Survey, 2014 1-year estimates

District of Columbia had greater inequality than all 50 states. (See table.)

The Census provides a Gini index for 381 metropolitan areas in the United States, with 46 of those areas located within the Fifth District. Most of the metropolitan areas within the Fifth District had lower income inequality than the nation as a whole, and for many of the metropolitan areas with a higher Gini index, the value was not statistically different from the U.S. index. In fact, of the Fifth District metropolitan areas, only the Durham-Chapel Hill, N.C., metropolitan area had income inequality that was statistically more unequal than the nation. (See table.)

For many metropolitan areas, income inequality has increased in recent years, as it has in the nation. A recent Brookings Institution analysis of the change in income inequality from 2007 to 2014 in the country's 100 largest metropolitan areas found that several Fifth District metropolitan areas experienced a statistically significant increase in inequality over this period as indicated by an increase in the

the impact on outcomes at subsequent stages can be measured. The SGM starts with a child's circumstances at birth and then estimates the probability of success at each stage starting with early childhood, where success is measured by acceptable pre-reading and math skills and behavior that is generally school appropriate. Other stages include middle childhood, adolescence, transition to adulthood, and finally adulthood, where success is defined as reaching middle class. The SGM is just one example of the types of models and new datasets that researchers are using to explore the factors that influence both income inequality and economic mobility.

Income Inequality and Economic Mobility in the Fifth District

When it comes to measures of income inequality and economic mobility, the states in the Fifth District vary widely. Using the Gini index as a measure of income inequality, Maryland had the least inequality in income, with a Gini index of 0.449, while the District of Columbia had the greatest income inequality, with an index of 0.522, based on Census data for 2014. All of the states in the Fifth District had a Gini index lower than the 0.48 index for the nation, but the

95/20 ratio. These included Charlotte, N.C.; Raleigh, N.C.; Washington, D.C.; and Virginia Beach-Norfolk, Va. None of the Fifth District metro areas included in the Brookings analysis experienced a decline in inequality.

These findings must be qualified, however. The smaller sample size for metropolitan areas, even the largest 100, introduces more error around the estimates, which means some of the movement, both positive and negative, does not reliably indicate a change. In addition, as noted earlier, the Census definition of income, which is the primary source for states and metro areas, does not include all of the effect of government transfers and the federal tax system that is used by the CBO to calculate net after-tax income. These adjustments to money income generally serve to improve outcomes for the lower quintiles and lower net income for the upper quintiles.

Exploring the differences in economic mobility across geographic areas is difficult because the measures that have become the standard at the national level, the IGE and the transition matrix, are not easily replicated at the regional level due to data constraints. Research at the Pew Economic Mobility Project provides state-level analysis of economic

mobility using earnings data from the Survey of Income and Program Participants as well as the Social Security Administration’s Master Earnings File. In combination, these datasets allow researchers to examine intragenerational mobility, using a 10-year span between ages 35-39 and 45-49.

Pew researchers calculated two measures: (1) absolute mobility, measured as the growth in earnings between the two five-year periods; and (2) relative mobility, or the change in an individual’s percentile rank in the earnings distribution over the 10-year period. For the relative mobility measure, upward mobility was defined as a movement from the bottom half of the earnings distribution at age 35-39 to 10 or more percentage points higher in the distribution by age 45-49. Similarly, downward mobility was measured as movement from the top of the income distribution (above the median) at age 35-39 to 10 or more percentiles lower in the earnings distribution by age 45-49. Relative mobility was calculated using the national earnings distribution as well as the regional earnings distribution, although the discussion that follows references only the national earnings distribution.

In these results, Maryland was the only state where relative upward mobility was higher than the national average, while three states in the Fifth District — North Carolina, South Carolina, and Virginia — had upward mobility rates that were below the national rate. Maryland was also the only state in the District with absolute mobility that was significantly higher than the national average. Rates of downward mobility for the District reveal that Maryland and Virginia both had rates of relative downward mobility that were better (that is, lower) than the national average. (See table.)

To explore economic mobility across metropolitan areas in the Fifth District, we turn to work done by Raj Chetty of Stanford University and co-authors using yet another measure of economic mobility, one that relies on data from tax records. In order to reveal differences across geographic areas within the United States, their work focused on commuting zones that cover the entire country, although they also calculated their measures for counties and metropolitan areas. Instead of calculating the IGE, the authors use a “rank-rank” measure that describes the correlation between the parents’ rank in the national distribution and the children’s rank. As with the measure used in the Pew study, Chetty and co-authors also calculate an absolute upward mobility measure that generates the expected rank of children whose parents are at the 25th percentile of the national income distribution. Broadly speaking, mobility appears to be lowest in the Southeast and highest in the Midwest.

Interestingly, within the Fifth District, we see the same pattern emerge if we look at the measure of absolute upward mobility for metro areas — the lowest values are primarily in North and South Carolina and in the Virginia Beach-Norfolk metro area, while higher values, and therefore higher expected income ranks, are measured for metro areas in the northern and western part of the District. (See map.) The authors explore many factors that may help to explain geographical differences in economic mobility, including

Economic Mobility in the Fifth District

Region/States	Absolute Mobility	National Earnings Distribution	
		Relative Upward Mobility	Relative Downward Mobility
Nation	17%	34%	28%
District of Columbia	13%	30%	25%
Maryland	21%	42%	22%
North Carolina	14%	26%	28%
South Carolina	12%	26%	34%
Virginia	18%	31%	22%
West Virginia	13%	28%	33%

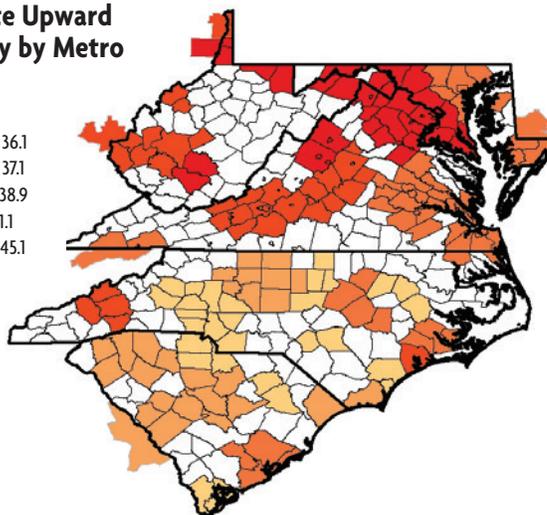
- Higher mobility than the national average
- Lower mobility than the national average
- Not statistically different from the national average

NOTE: Mobility is based on 10-year earnings differential for prime working-age adults during 1978-2002.

SOURCE: Pew Economic Mobility Project analysis of Survey of Income and Program Participants and Social Security Administration data (1978-2007)

Absolute Upward Mobility by Metro Area

- 34.9 - 36.1
- 36.2 - 37.1
- 37.2 - 38.9
- 39 - 41.1
- 41.2 - 45.1



NOTE: Values in the map are the expected income rank of children whose parents are at the 25th percentile of the national income distribution.

SOURCE: “Where is the Land of Opportunity? The Geography of Intergenerational Mobility in the United States,” Raj Chetty, Nathaniel Hendren, Patrick Kline, and Emmanuel Saez. *Quarterly Journal of Economics*, 2014.

race, segregation, inequality, school quality, social networks, and family structure. They stop short of identifying which of the factors is the most important determinant of upward mobility but provide plenty of data and questions to be addressed in future research.

The available data indicate that the United States has become a nation with greater income inequality since 1979 and relatively flat economic mobility since 1990. Although there is no causal relationship between income inequality and economic mobility, some economists have raised concerns about the underlying factors that seem to influence both trends. Within the Fifth Federal Reserve District, every state had lower inequality than the national average, while the District of Columbia had the highest level of inequality in the country.

EF

STATE DATA, Q3:15

	DC	MD	NC	SC	VA	WV
Nonfarm Employment (000s)	766.6	2,663.7	4,251.2	2,010.9	3,860.7	760.7
Q/Q Percent Change	0.0	0.3	0.5	0.8	0.7	-0.6
Y/Y Percent Change	1.6	1.6	2.5	2.9	2.0	-0.7
Manufacturing Employment (000s)	1.1	104.0	461.5	236.1	233.4	47.6
Q/Q Percent Change	3.0	0.2	0.3	0.2	0.2	-0.3
Y/Y Percent Change	13.3	0.9	2.6	2.5	0.6	-0.4
Professional/Business Services Employment (000s)	161.7	431.1	592.5	263.6	697.8	66.6
Q/Q Percent Change	0.0	0.5	1.3	1.3	0.7	-0.1
Y/Y Percent Change	2.5	1.7	3.4	3.5	2.5	-1.2
Government Employment (000s)	238.2	502.2	721.4	360.5	713.0	151.3
Q/Q Percent Change	0.1	-0.2	0.1	0.2	0.2	-0.5
Y/Y Percent Change	1.2	-0.1	1.1	1.0	0.2	1.2
Civilian Labor Force (000s)	389.2	3,150.7	4,763.7	2,253.1	4,224.4	784.6
Q/Q Percent Change	0.4	0.2	0.3	0.1	0.0	0.0
Y/Y Percent Change	2.4	0.8	1.9	1.4	-0.4	-0.1
Unemployment Rate (%)	6.7	5.1	5.7	5.6	4.2	6.7
Q2:15	7.0	5.2	5.8	6.1	4.5	7.1
Q3:14	7.8	5.7	6.1	6.5	5.1	6.5
Real Personal Income (\$Bil)	44.0	308.5	374.8	171.2	401.2	62.5
Q/Q Percent Change	0.7	0.4	0.8	1.1	0.8	0.1
Y/Y Percent Change	4.2	3.6	4.5	5.0	4.3	1.9
Building Permits	998	4,470	13,146	8,447	8,796	807
Q/Q Percent Change	-40.7	-8.5	-7.5	-5.0	1.4	-9.5
Y/Y Percent Change	-52.4	-14.2	-7.9	20.2	19.7	24.0
House Price Index (1980=100)	752.4	436.6	327.4	333.4	423.9	232.1
Q/Q Percent Change	3.5	0.4	1.1	0.9	0.5	-0.1
Y/Y Percent Change	8.1	2.6	4.7	5.5	3.0	3.0

NOTES:

- 1) FRB-Richmond survey indexes are diffusion indexes representing the percentage of responding firms reporting increase minus the percentage reporting decrease. The manufacturing composite index is a weighted average of the shipments, new orders, and employment indexes.
- 2) Building permits and house prices are not seasonally adjusted; all other series are seasonally adjusted.
- 3) Manufacturing employment for DC is not seasonally adjusted

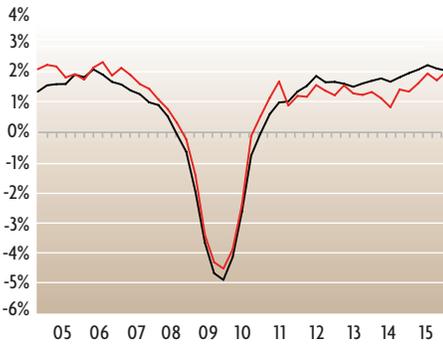
SOURCES:

Real Personal Income: Bureau of Economic Analysis/Haver Analytics.
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 Employment: CES Survey, Bureau of Labor Statistics, U.S. Department of Labor/Haver Analytics
 Building Permits: U.S. Census Bureau/Haver Analytics
 House Prices: Federal Housing Finance Agency/Haver Analytics

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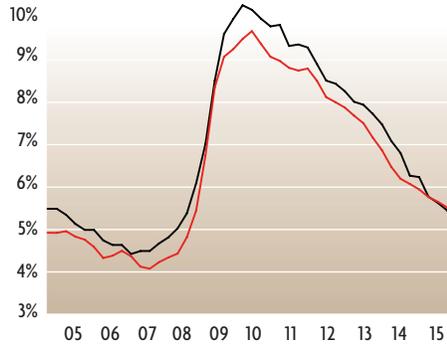
Nonfarm Employment

Change From Prior Year
Third Quarter 2004 - Third Quarter 2015



Unemployment Rate

Third Quarter 2004 - Third Quarter 2015



Real Personal Income

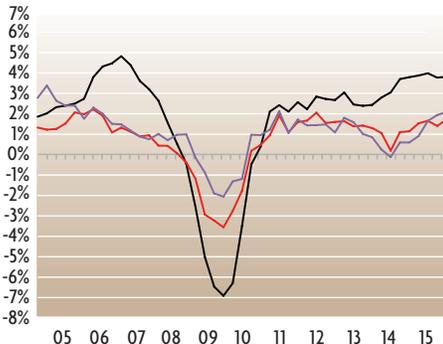
Change From Prior Year
Third Quarter 2004 - Third Quarter 2015



— Fifth District — United States

Nonfarm Employment Major Metro Areas

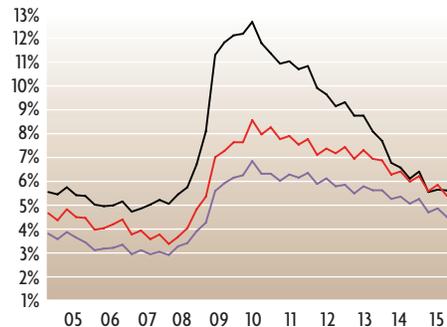
Change From Prior Year
Third Quarter 2004 - Third Quarter 2015



— Charlotte — Baltimore — Washington

Unemployment Rate Major Metro Areas

Third Quarter 2004 - Third Quarter 2015



— Charlotte — Baltimore — Washington

Building Permits

Change From Prior Year
Third Quarter 2004 - Third Quarter 2015



— Fifth District — United States

FRB—Richmond Services Revenues Index

Third Quarter 2004 - Third Quarter 2015



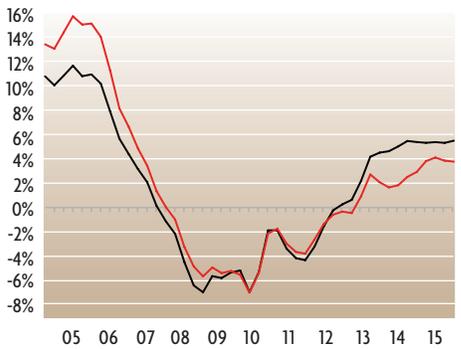
FRB—Richmond Manufacturing Composite Index

Third Quarter 2004 - Second Quarter 2015



House Prices

Change From Prior Year
Third Quarter 2004 - Third Quarter 2015



— Fifth District — United States

METROPOLITAN AREA DATA, Q3:15

	Washington, DC	Baltimore, MD	Hagerstown-Martinsburg, MD-WV
Nonfarm Employment (000s)	2,591.4	1,370.0	103.4
Q/Q Percent Change	0.0	0.0	-1.7
Y/Y Percent Change	2.1	1.7	0.4
Unemployment Rate (%)	4.3	5.2	5.4
Q2:15	4.5	5.5	5.7
Q3:14	5.1	6.0	6.1
Building Permits	6,079	2,032	234
Q/Q Percent Change	-15.3	-15.8	-24.3
Y/Y Percent Change	-15.8	-7.2	-17.0

	Asheville, NC	Charlotte, NC	Durham, NC
Nonfarm Employment (000s)	182.0	1,101.4	294.2
Q/Q Percent Change	-0.4	-0.4	-0.6
Y/Y Percent Change	2.9	3.8	1.9
Unemployment Rate (%)	4.6	5.4	5.0
Q2:15	4.8	5.6	5.1
Q3:14	5.0	6.1	5.1
Building Permits	512	4,519	1,173
Q/Q Percent Change	-18.3	-9.5	54.7
Y/Y Percent Change	37.3	-12.7	32.7

	Greensboro-High Point, NC	Raleigh, NC	Wilmington, NC
Nonfarm Employment (000s)	353.1	585.0	121.1
Q/Q Percent Change	-0.9	0.9	0.6
Y/Y Percent Change	2.1	4.1	3.6
Unemployment Rate (%)	5.9	4.7	5.5
Q2:15	6.1	4.9	5.6
Q3:14	6.6	5.1	6.1
Building Permits	707	2,856	453
Q/Q Percent Change	25.1	-20.2	39.8
Y/Y Percent Change	20.6	-10.7	-29.2

NOTE:
Nonfarm employment and building permits are not seasonally adjusted. Unemployment rates are seasonally adjusted.

	Winston-Salem, NC	Charleston, SC	Columbia, SC
Nonfarm Employment (000s)	256.1	335.6	384.2
Q/Q Percent Change	-0.8	0.4	0.2
Y/Y Percent Change	1.9	3.7	3.0
Unemployment Rate (%)	5.5	4.8	5.2
Q2:15	5.6	5.3	5.6
Q3:15	6.0	5.8	6.1
Building Permits	254	1,958	1,327
Q/Q Percent Change	-52.8	13.2	-6.9
Y/Y Percent Change	-63.1	54.9	-0.2

	Greenville, SC	Richmond, VA	Roanoke, VA
Nonfarm Employment (000s)	402.4	653.4	161.1
Q/Q Percent Change	0.5	0.8	0.1
Y/Y Percent Change	3.8	3.0	0.6
Unemployment Rate (%)	5.0	4.4	4.2
Q2:15	5.5	4.8	4.6
Q3:15	6.1	5.5	5.3
Building Permits	1,716	1,456	N/A
Q/Q Percent Change	11.1	5.5	N/A
Y/Y Percent Change	64.4	16.3	N/A

	Virginia Beach-Norfolk, VA	Charleston, WV	Huntington, WV
Nonfarm Employment (000s)	772.3	122.7	139.6
Q/Q Percent Change	0.5	-1.0	-1.1
Y/Y Percent Change	1.0	-2.0	-1.2
Unemployment Rate (%)	4.7	6.4	6.2
Q2:15	5.1	6.8	6.5
Q3:15	5.7	6.3	6.4
Building Permits	1,827	62	51
Q/Q Percent Change	-0.8	-11.4	-37.0
Y/Y Percent Change	47.1	933.3	50.0

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Getting Back Into Equilibrium

BY JOHN A. WEINBERG

Everyone knows short-term interest rates have been hovering at very low levels, near zero, since the Great Recession. But not everyone may understand just how remarkable this is historically. Between 1954 and 2007, there were only four instances when the effective federal funds rate dipped below 2 percent, the most recent being late 2001 to late 2004. In none of those cases did it approach zero, let alone stay there for years. Something similar is happening to longer-term rates, which are affected by a broader array of external factors such as international demand for U.S. debt. The yield on 10-year Treasuries, for example, dropped below 2 percent for the first time in 2012 and has recently been averaging around 1.5 percent.

Part of this trend has to do with the fact that inflation has been subdued for a long time. That has affected expectations of future inflation, which in turn are reflected by low nominal rates. Here we see something even more usual: negative rates. For example, the yield on the five-year Treasury indexed for inflation has not just been low by historical standards, but below zero for much of the post-2009 recovery.

In part to understand this phenomenon, many economists have turned their attention to the “equilibrium” or “natural” real rate of interest. Roughly speaking, this is how economists capture the rate at which people can trade consumption in the future for consumption today, taking into account the fundamentals driving the growth of consumption over time. It’s at “equilibrium” in the sense that people’s desired consumption plans are consistent with this rate of exchange.

In contrast to the nominal or real interest rates for which we have data, the equilibrium rate is not directly observed. Instead, economists offer competing models that try to estimate this rate by using a variety of inputs (for example, productivity, demographics, and the potential for long-run growth). In general, though, these models try to express the rate as the relationship between the current real interest rate and the expected growth of consumption.

This relationship is imprecise, but it serves as one useful benchmark for a central bank in gauging whether real rates are too tight, too accommodative, or just right. When a central bank needs to adjust policy — say, by responding to a spike in inflation — it generally tries to make sure that the benchmark rate tracks this equilibrium rate. The equilibrium rate is what an inflation-targeting central bank can pay attention to in setting its policy rate in pursuit of its macroeconomic objectives. And this is especially true if the central bank conducts its monetary policy by applying some version of a Taylor rule, which ties the desired benchmark rate to measures of economic activity and prices.

So where is the equilibrium rate today? Most models find that it’s very low by historical standards but still higher

than a few years ago. For example, the well-known Laubach-Williams model estimates the equilibrium rate at around zero now. That’s sharply lower than the long-run historical average between 2 percent and 4 percent but slightly higher than it was a few years ago. Two of our economists, Thomas Lubik and Christian Matthes, recently compared the Laubach-Williams model to an alternative that has fewer theoretical restrictions, yielding somewhat different estimates but a very similar trend: First, the equilibrium rate is higher than the real interest rate; second, there has been a positive gap between the real and equilibrium rates since the Great Recession. This finding implies that monetary policy is still in a period of accommodation, if perhaps less so than a few years ago.

Some historical perspective can also help with another point. During the Great Moderation — the mid-1980s until the Great Recession — the Fed generally tried to follow the equilibrium rate while responding to deviations of inflation from the Fed’s goal, as well as to deviations from the Fed’s assessment of maximum sustainable employment or potential growth. Today, given that unemployment has dropped from around 10 percent to around 5 percent and inflation is rising but still (slightly) coming up short of the Fed’s long-run average target of 2 percent, that historical behavior would suggest that the Fed doesn’t need to move that much away from current estimates of the equilibrium rate.

Where the long-term equilibrium rate *should* be, however, is up for debate. Most current forecasts see the long-run equilibrium rate as around 3.75 percent, with 2 percent for inflation and 1.75 percent as the real return on investment. But economists are divided over whether this is accurate or whether this should be lower to reflect more muted prospects for long-run consumption growth. Some point to suppressed aggregate global demand, others to a global savings glut, or a mix of other reasons. But whatever the case may be, the prospect of very low real rates lagging behind the equilibrium rate for an extended period is a real risk, as it could eventually feed into rising inflation and distortions in financial markets.

In our recently published annual report, we explore some of the arguments for why we might expect lower growth to endure. While we remain reasonably confident about growth picking up in the long run, the essay raises the prospect of what may happen if sluggishness persists in the short to medium run. In our view, this scenario may hold down the path for the equilibrium rate. This challenge is something that will have to figure into the Fed’s rate-setting decisions. **EF**

John A. Weinberg is senior vice president and special advisor to the president at the Federal Reserve Bank of Richmond.

NEXT ISSUE

Marketplace Lending

The worlds of finance and technology are colliding. Marketplace lenders are one rapidly growing segment of “fintech” firms. These nonbanks use advanced algorithms and sleek Web platforms to connect investors with consumers and businesses seeking loans. Does this growing sector represent the next evolution in banking and finance, and what challenges does it pose to regulators and policymakers?

Social Security

Since Social Security’s inception during the Great Depression, economists have played a central role in its reforms over the decades. Today, economic research is still influencing the policy debate.

State Tax Rates

States across the country have been lowering their corporate tax rates and other taxes on business to attract employers and boost their economies. Yet state taxes are just one of many factors affecting the location and expansion decisions of firms. Economists have questioned whether these tax cuts can deliver the economic growth their advocates sometimes promise.

Jargon Alert

Low economic growth and inflation following the Great Recession have revived interest in the concept of “helicopter money” — pumping money directly into the economy — as a more direct way of boosting aggregate demand than conventional monetary policy. But such a policy is uncharted territory, and many economists argue it would come with risks.

Federal Reserve

Monetary policy is made independently of Congress and the executive branch, but over time the Fed is accountable to Congress for its monetary policy successes and failures. What is Congress’ role in overseeing monetary policy, and how has it changed over the Fed’s history?

Interview

Josh Lerner of Harvard Business School on entrepreneurship, the ways that venture capitalists create value, and the declining startup rate in high tech.

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REGIONAL MATTERS

Introducing the Richmond Fed's Web series focusing on topics and data related to urban and regional economic trends that matter to the Fifth District.

Our article "Mortgage Markets: A Long Road Home" looks at how much mortgage markets have improved in recent months and how current foreclosure and forfeiture rates compare to before the housing crisis.

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