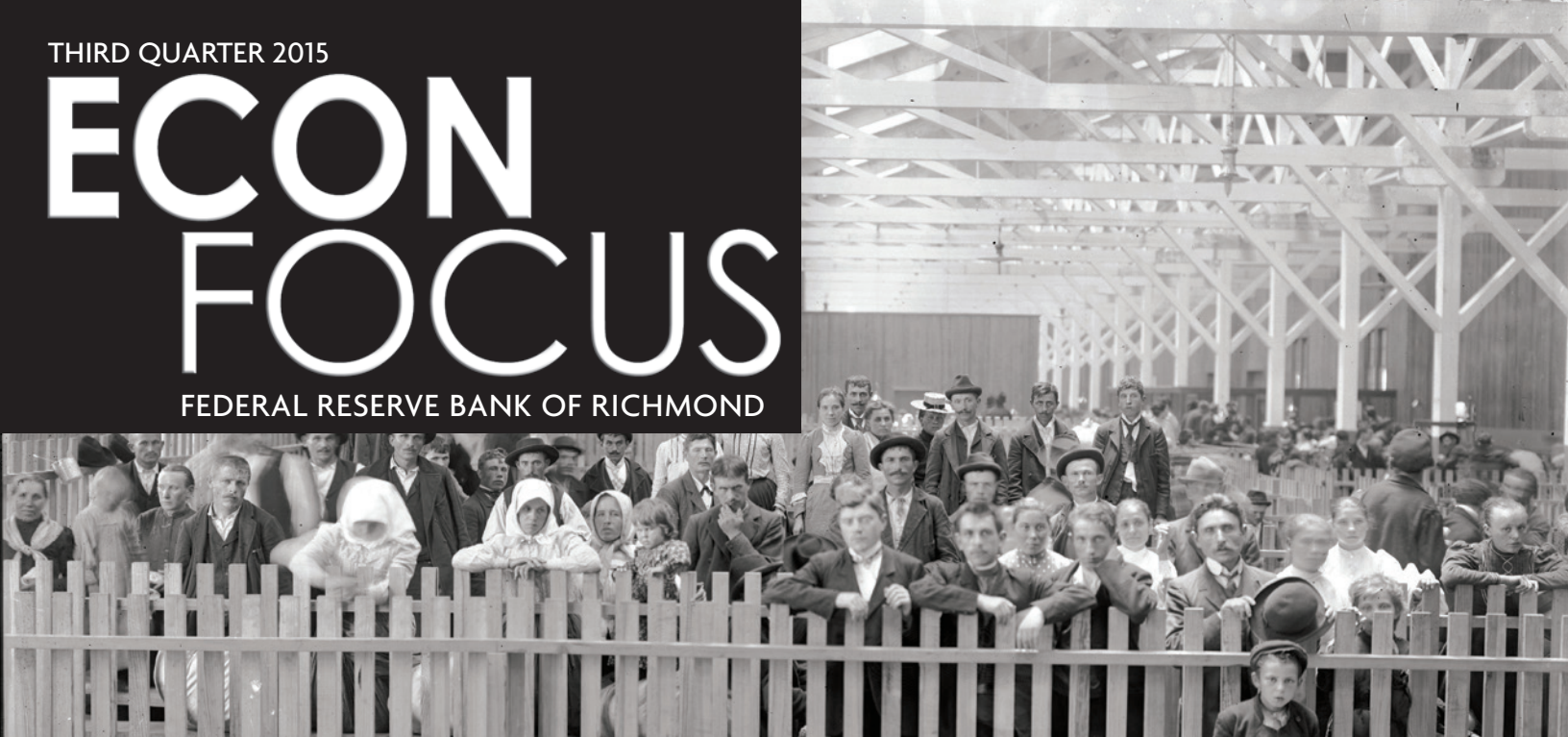


THIRD QUARTER 2015

# ECON FOCUS

FEDERAL RESERVE BANK OF RICHMOND



## A Fresh Look at the Huddled Masses

**Economists are looking at past mass migration waves  
to explain the challenges of immigration today**



Trading  
with Cuba

Why the Fed Is  
Funding Highways

Interview with  
Emi Nakamura

# ECON FOCUS

VOLUME 19  
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THIRD QUARTER 2015

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

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## The Dual Mandate and Emerging Markets

In December, the Federal Open Market Committee (FOMC) voted to increase interest rates for the first time in more than seven years. Naturally, this has raised many questions about the effects of higher interest rates on the United States — but what about the effects globally, especially on emerging market economies? And how much, if at all, should the Fed weigh the global effects as it considers future policy changes? Given the size of the U.S. economy and the extent to which we are connected to other countries through trade and financial markets, these are important questions to ask.

In general, any country's policymakers face what's known as a "trilemma": As long as they allow free capital movement and monetary policy authorities have independent control of interest rates, they must allow their exchange rates to fluctuate. If they want to defend their exchange rate against another country's currency, they must either impose capital controls or follow that country's monetary policy, thereby tying their central bank's hands. In short, they cannot simultaneously have independent monetary policy, free capital movement, and a fixed exchange rate.

Monetary policy in the United States following the Great Recession underscored this trilemma for policymakers in emerging market economies: Should they lower interest rates in an effort to prevent currency appreciation, thereby risking overstimulating their economies? Or should they allow their currencies to appreciate and risk lowering their exports? In the end, many of these countries did cut interest rates, though not as much as the United States. They thus offered relatively higher returns, leading to substantial inflows of capital and currency appreciation. Some observers cited Fed policy for contributing to excessive credit growth and potentially creating financial instability in emerging markets.

During the spring of 2013, the global economy experienced what some have dubbed a "taper tantrum." When then-Chairman Bernanke signaled that the Fed would soon wind down asset purchases, global markets reacted strongly and emerging market economies saw currency depreciation, asset-price declines, and investment outflows. In part, this might have reflected investors' pre-existing concerns about these economies' prospects. But some critics blamed the Fed for creating instability. Ultimately, however, the effect of U.S. policy changes on foreign economies depends on the decisions of foreign policymakers — although it is naturally distressing when our actions present them with difficult trade-offs.

Now that the Fed has begun raising interest rates, some observers and policymakers are concerned about the potential for these increases to again create volatility abroad. While these concerns are understandable, in my view they should not affect the pace or timing of U.S. monetary policy changes. The Fed has a dual mandate to keep inflation low and stable and

to promote maximum employment in the United States. To comply with that mandate, we must base our decisions on the economic outlook here at home. If the Fed were to take into account the impact of its policy abroad, especially on more volatile emerging markets, it would risk losing sight of its statutory mission.

That doesn't mean we can ignore the rest of the world.

The Fed should, and does, carefully monitor foreign economic developments that have implications for U.S. growth and inflation, and take them into account when making policy decisions. In 1998, for example, the Fed cut rates following financial crises in Asia and Russia that had the potential for spillover effects on the U.S. economy. And one rationale for not raising rates last September was turbulence in China and emerging market economies that might have posed a risk to U.S. growth, although my view then was that those spillovers were likely to be minimal.

As the Fed tightens monetary policy, it's possible that policymakers in other countries, particularly the emerging market economies, will be faced anew with difficult policy choices. One way the Fed can help mitigate unnecessary volatility is by communicating clearly our objectives and expectations, giving markets time to adjust. For example, despite the "taper tantrum" in 2013, once the Fed began tapering off its asset purchases in December of that year, the reaction in global markets was much more muted, perhaps in part because the Fed had been very clear in its communications.

As the world's largest developed economy, the United States plays a unique role in the global economy. Many countries depend on American consumers to buy their exports. The U.S. dollar is the dominant global reserve currency, and U.S. Treasury bonds are the preferred safe asset of investors across the globe. In short, the health of the U.S. economy matters for the health of the world economy — and the health of the U.S. economy depends critically on the effective conduct of monetary policy. In the long run, the most important thing the Fed can do for the rest of the world is to remain focused on promoting low and stable inflation at home. **EF**



A handwritten signature in black ink, appearing to read "Jeff M Lacker".

JEFFREY M. LACKER  
PRESIDENT  
FEDERAL RESERVE BANK OF RICHMOND



**MARYLAND** — More than a year after legislation allowing for the private manufacturing and retail sales of medical marijuana, Maryland set a Nov. 6, 2015, deadline for growers, processors, and dispensaries to apply for business licenses. The state received more than 1,000 applications. Among them were 146 applications for growing facilities and 811 for dispensaries — far above the available 15 licenses for growing and 94 for dispensaries. Preliminary licenses were originally expected to be issued in January 2016, but the large number of applicants has caused the Maryland Medical Cannabis Commission to extend the review process indefinitely. Once preliminary licenses are issued, businesses will have one year to complete the final requirements and request a final inspection.



**NORTH CAROLINA** — Honda Aircraft Co., the aviation arm of Honda Motor Co., delivered its first business jet — the HA-420 HondaJet — just before Christmas 2015. The jet is manufactured in Greensboro, N.C., where Honda Aircraft Co. is headquartered and is part of a growing aviation cluster. The company employs about 1,700 people and builds four jets per month. The jet, which can be configured for up to seven people, was certified as airworthy by U.S. regulators in early December 2015, paving the way for filling more than 100 HondaJet orders.



**SOUTH CAROLINA** — Despite historic flooding in October 2015, economists in South Carolina said the economy is strong going into 2016. The findings were released at a December economic outlook conference at the University of South Carolina, which also estimated that the final cost of the flood may exceed Hurricane Hugo's \$7 billion price tag. USC economists predicted the rebuilding effort will create a temporary stimulus, potentially adding a 0.5 percentage point to statewide employment growth in 2016.



**VIRGINIA** — As part of the fiscal year 2017-2018 budget, Gov. Terry McAuliffe has proposed a \$2.43 billion bond package that would fund a wide range of investments to help diversify the state's economy. It includes \$850 million for research-oriented projects at four-year colleges and universities and \$214 million primarily for expanding STEM (science, technology, engineering, and math) programs at community colleges. Money is also allotted for developing state parks, improving wastewater treatment systems, and enhancing capacity and operations at the Port of Virginia. The bond package is subject to approval by the Virginia General Assembly.



**WASHINGTON, D.C.** — The District has agreed to pay the U.S. Army \$22.5 million for just over 66 acres of the former campus of Walter Reed Army Medical Center, which moved to Bethesda, Md., in 2011. A proposed two-decade project would result in a mixed-use development site containing residences, charter schools, office space, homes for homeless veterans, and more. It is expected to create more than 2,000 construction jobs and to bring in more than \$30 million in new annual tax revenue once completed.



**WEST VIRGINIA** — West Virginia has lately been making strides in renewable energy. In November, Canadian developer Enbridge purchased a 103-megawatt wind farm in Grant County for \$200 million, with operations expected to begin in December 2016. Then in December, Enbridge entered into an agreement with San Francisco-based software firm Salesforce that requires Salesforce to buy 125,000 megawatt-hours of electricity annually from the new wind farm over 12 years. The regional grid currently powers most of Salesforce's data center load.

# Worker Pay vs. CEO Pay

BY TIM SABLIK

In the debate over the causes of the financial crisis of 2007-2008, many commentators have singled out executive compensation packages at financial firms as playing a key role. They argue that in the run-up to the crisis, pay packages encouraged CEOs to take excessive risks.

Among other things, the 2010 Dodd-Frank Act directed financial regulators to address these concerns. One of its provisions, “say on pay,” was implemented in 2011 by the Securities and Exchange Commission (SEC). Say on pay is designed to give shareholders more influence over executive pay. (See “Checking the Paychecks,” *Region Focus*, Fourth Quarter 2011.) Several countries have adopted such laws, and a 2013 cross-country study by Ricardo Correa of the Federal Reserve Board and Ugur Lel of Virginia Tech found that they have generally been associated with reduced executive compensation that is more sensitive to firm performance.

On Aug. 5, 2015, the SEC adopted a complementary rule that requires public companies to calculate and disclose the ratio of their CEO’s compensation to that of their median worker, starting in 2017. Firms are given some flexibility in how they determine their employee population for purposes of the rule. For example, they may exclude some of their non-U.S. employees from their total count and generally can choose to update their calculation only every three years. According to a statement by SEC Chair Mary Jo White, the rule is intended to provide shareholders with “additional company-specific information that they can use when considering a company’s executive compensation practices.”

Many on both sides of the issue have raised questions about how much effect the new rule will have. Supporters of such disclosure have argued that the flexibility granted to firms under the rule, designed by the SEC to address companies’ concerns about the costs of calculating the ratio, makes the ratio subject to manipulation by firms. Others have argued that the disclosure offers little new information. Firms have long been required to disclose the compensation of top executives, and many large firms report total compensation as well as number of employees, making it possible to compute average salary.

In fact, economists and think tanks have used such information to construct their own ratios of CEO and worker pay. In June 2015, the Economic Policy Institute reported that CEOs at the largest 350 firms in the S&P Index earned over 300 times the average worker in their industries, a more than 10-fold increase from the 1970s. On the other hand, Jae Song of the Social Security Administration, Fatih Guvenen of the University of Minnesota, Till von Wachter of the University of California, Los Angeles, and David Price and Nicholas Bloom of Stanford University looked at a larger pool of firms and found that much of the growth in earnings

inequality can be attributed to increased differences in compensation between firms rather than within firms. Relative incomes within even high-paying firms have remained largely unchanged for three decades. This would suggest that measuring wage inequality within firms could be less meaningful.

Economists are also divided over the causes and the significance of rising executive pay. Some suggest that the large increase is a symptom of executives’ strong influence over their own compensation through friendly boards, which would suggest that measures to improve corporate governance like say on pay and the new ratio could be effective at checking such behavior. But in a 2008 article, Xavier Gabaix of New York University and Augustin Landier of the Toulouse School of Economics found that rising CEO pay is tied to the growth of firms, since larger, more complex companies require a broader pool of skills to manage.

It’s also unclear how large a role financial pay packages played in the financial crisis. A 2011 article in the *Journal of Financial Economics* by Rüdiger Fahlenbrach of the Swiss Finance Institute and René Stulz of Ohio State University found no evidence that firms with CEOs whose compensation was tied to company performance fared better during the financial crisis of 2007-2008; in fact, they found some evidence that they actually performed worse.

To the extent that the ratio has more to do with the debate over wage inequality than investor protection, critics have argued that the SEC does not have a role to play. Daniel Gallagher, one of the two SEC commissioners who voted against the rule, stated in his dissent that “addressing perceived income inequality is not the province of the securities laws or the Commission.”

On the other hand, it’s possible that public disclosure of the ratio of CEO to median employee pay could help improve corporate governance in other ways. In a 2001 article, Nobel Prize-winning economist Jean Tirole first advanced the idea of a “stakeholder society.” Tirole argued that, when thinking about corporate governance, economists should also consider the effect that managerial decisions have on “natural stakeholders,” such as employees, customers, and suppliers.

Requiring the disclosure of CEO-to-employee pay ratios could be seen as one step in helping to inform such a stakeholder society, forcing managers of firms to increase their consideration of employees’ welfare when making decisions. Indeed, experiments conducted by Bhavya Mohan, Michael Norton, and Rohit Deshpande of the Harvard Business School found that consumers were more willing to buy from companies that reported lower CEO-to-worker pay ratios, even if that meant paying slightly more for the product. Time will tell whether the new disclosure rule will affect the behavior of consumers — and boards. **EF**

## A Bridge Too Far?

BY HELEN FESSENDEN

In a novel move, a new transportation-funding law is sending billions from the Fed's surplus account to help pay for roads, bridges, and mass transit

For drivers across the United States who fret over growing congestion and aging roads and bridges, some welcome news arrived when President Obama signed a sweeping five-year transportation bill into law in December. The \$305 billion measure boosted funding across the board, including an \$8 billion increase for highways over current levels, along with an additional \$2 billion for mass transit, just to name two examples.

The unusual twist is that roughly \$36 billion of the law's funding comes from the Federal Reserve. When lawmakers couldn't agree on how to boost financing via traditional means — including raising the gas tax — they found their source within the Fed instead. Although senior Fed officials objected that using a central bank to fund specific fiscal needs would set a worrisome precedent, the strong political momentum to complete the long-stalled bill persuaded large majorities in both parties to throw their support behind the underlying legislation.

The transportation legislation taps into two Fed sources: \$19.3 billion as an immediate transfer from the Fed's capital surplus account — a pool of funds the Fed has routinely set aside since its early years — followed by another \$14 billion over the next five years; and a further \$2.8 billion diverted from the Fed's dividend payments to member banks, also over five years. Although it

isn't the first time Congress ordered Fed surplus-account funds to be channeled to the Treasury, this case represents the largest such transfer ever, both in nominal and in percentage terms.

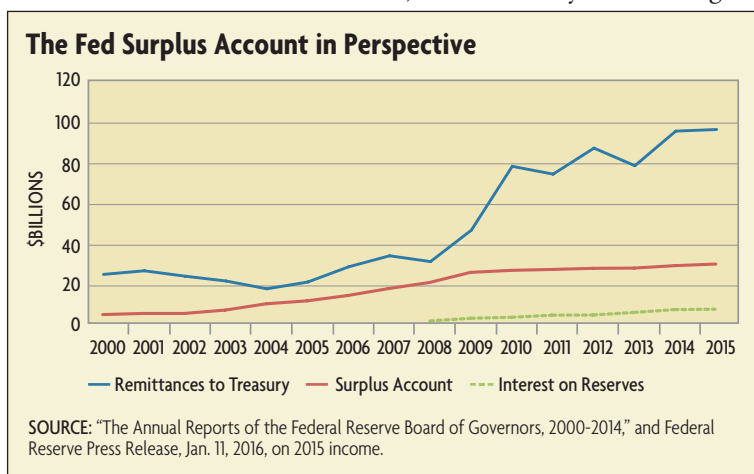
Previous transfers from the Fed's surplus account were relatively small and rare, and they generally went toward general deficit reduction. In this case, however, Congress ordered the money to be channeled to the Treasury for a specific fiscal need unrelated to monetary policy: surface transportation. It also required that the surplus account, which was \$29.3 billion at the end of December 2015, be capped at \$10 billion — the first permanent limit ever imposed — and that any surplus funds in excess of that cap go back to the Treasury. The cut in dividend payments was also a first. Altogether, these provisions allowed lawmakers to close a financing gap in the legislation that had grown over the years due to broad political reluctance to hike the long-frozen gas tax, the primary source of revenue for highway funding. Without the Fed money, financing the measure would have been a far heavier lift, according to lawmakers.

"There is plenty of profit sloshing around there that would come back to the Treasury anyway," was how Sen. Dan Coats (R-Ind.) described the prevailing sentiment to *Roll Call*. Most lawmakers viewed the surplus account as "easy money," he added.

This may have indeed seemed like easy money to some, but the move prompted concerns from economists and Fed policymakers about the underlying principle of central bank independence. They also noted that the funding fix didn't represent a long-term budget solution on the fiscal side.

### Fed's Rainy Day Fund or Congress' Piggy Bank?

There is often confusion between the Fed's "surplus account" and the Fed's (far larger) "operating surplus," which is



income left over after expenses and sent to the Treasury on a weekly basis. There is also a common perception that the surplus account has been traditionally used as a “rainy day fund” in Fed operations, even though that isn’t exactly the case, either. The Fed doesn’t need such a surplus the way a bank needs capital as a buffer, because it has the power to expand or contract the amount of money in the economy. And while many other central banks have similar accounts, not all do. Nor has the surplus account played a major role when the Fed has responded to emergencies, such as its various forms of lending during the 2007-2009 financial crisis.

Instead, a more accurate description of the surplus account is that it’s one piece of a larger package that dates back to the Fed’s beginnings, namely, the framework that set up the relationship between the Fed and member banks. This is because the surplus account — until the highway legislation — was tied directly to another component of the Fed-bank relationship: It had to equal the amount of stock that member banks hold in the regional Reserve Banks as paid-in capital. After several revisions in the Fed’s early decades, the Federal Reserve Board of Governors set this ratio in 1964 so there wouldn’t be ambiguity about the surplus account’s required size. Due to this peg, the surplus account grew along with the paid-in capital account as more banks joined the System and as their assets grew over the years. In 2001, for example, the surplus account totaled \$7.3 billion; by 2015, it had expanded to \$29 billion (see chart).

Most of the Fed’s gross earnings come from the interest the Fed earns from the Treasuries and other securities on its \$4.4 trillion balance sheet. Out of that income, the Fed must pay out its operational expenses, the interest it pays banks on the reserves they hold, and dividend payments to member banks. Once those costs are covered, the Fed sends to the Treasury any excess earnings. Those remittances have amounted to almost \$600 billion since the financial crisis, when the Fed vastly expanded its holdings of securities and took in a dramatic increase in interest income; in 2015, that amount was a record \$98 billion. As for the surplus account, the standard practice until the highway law was to compare it to the amount of member banks’ paid-in capital at the end of each year; if the former exceeded the latter, the excess in the account was also sent to the Treasury.

Overall, the Federal Reserve System has not suffered any net losses since 1915, and the surplus account has usually been untouched by Fed operations. But on rare occasions, Reserve Banks, such as the Richmond Fed, have dipped into the surplus account to cover unexpected losses, usually in cases when they had to recover from a revaluation of their foreign currency holdings, which total around \$20 billion for the System. But in general, such shortfalls are unusual. According to a 2002 Government Accountability Office report that analyzed the surplus account, there were only 158 weekly losses out of 7,337 possible cases from 1989 to 2001. In these cases, the Banks used money from the surplus account to temporarily cover those losses, while the surplus account was quickly replenished.

## Early Warnings

If the Reserve Banks tap into the surplus account only on rare occasions, and if the account hasn’t played a meaningful role in Fed operations or in emergencies, why did senior Fed officials oppose its funding the highway bill? One underlying concern, raised by Fed Chair Janet Yellen and others, is that such a transfer represents an infringement of Fed independence by breaking down the wall between fiscal policy — the exclusive domain of Congress — and monetary policy — the exclusive domain of the Fed since the 1951 Fed-Treasury Accord. Generally speaking, if central banks are forced to subordinate monetary policy to fiscal or political needs, politicians could compel them to print money, which in turn could spur inflation. In this particular case, warnings from Fed officials focused on the concern that Congress could turn to the Fed in future budget battles rather than making fiscal trade-offs (cutting spending or raising taxes) on its own. This was the gist of the warning issued by Fed Vice Chairman Stanley Fischer last November, when he said that the legislation has “manifold implications for central bank independence as well as for the quality of fiscal policy decisions.”

“Financing federal fiscal spending by tapping the resources of the Federal Reserve sets a bad precedent and impinges on the independence of the central bank,” agreed Yellen in congressional testimony in December. In addition, she said, “it weakens fiscal discipline.”

Former Fed Chairman Ben Bernanke, writing on his blog last December, detailed another critique on the budget side, one that other senior Fed officials have also noted. Because the surplus account holds U.S. government bonds, he wrote, the Treasury would see a drop in remittances if the Fed sold those securities to the public so that the proceeds could be transferred as cash to the Treasury. In effect, the outcome would be the same if the Treasury issued new debt to sell to the public and then paid interest on that debt to bondholders: There would be no net infusion of revenue to the government. So while its congressional backers may have presented the highway bill as fully funded, what actually occurred was, in Bernanke’s words, “budgetary sleight of hand.”

## The Century-Old Framework

The debate over the Fed’s role in funding the highway legislation is unlikely to end soon, but one thing is clear: The move represents a change from organizational principles dating from the Fed’s early days that relate to both the surplus account and the relationship between the Fed and member banks.

When the 1913 Federal Reserve Act chartered the Reserve Banks, it required that they be financed by member banks rather than congressional appropriations, in an attempt to make the Fed seem less risky to taxpayers and therefore politically more popular. Under these guidelines, if a bank wanted to join the Fed system, it had to purchase Fed stock in an amount equal to 3 percent of the capital and surplus listed on the bank’s most recent Call Report (namely, the accounting categories that represent the sum of owners’ permanent

equity). The member bank had the obligation to purchase additional stock, up to the same amount, “on call,” that is, available if the Federal Reserve Board demanded it. (Because these two provisions add up to 6 percent, the subscription is often referred to as 6 percent of a bank’s surplus and capital, but it is important to remember that the 3 percent “on call” is not held at Reserve Banks unless the Board asks for it.)

Since member banks couldn’t sell or use this capital for other investments, the Fed agreed to pay dividends on the paid-in capital to member banks. The Fed set the dividend payment at 6 percent, a return that stayed unchanged until the highway legislation. (The new law pegs it to the yield on the 10-year Treasury, now slightly below 2 percent. Only banks with assets greater than \$10 billion will be affected; smaller banks will still receive the full 6 percent.)

The size of the surplus, as well as its ratio to the capital account, has evolved over the decades, and at times it has been a target of congressional intervention. Originally, the Federal Reserve Act allowed the Fed to build up a surplus account equal to 40 percent of member banks’ paid-in capital; that ratio rose to 100 percent of paid-in and on-call capital in 1919. The Banking Act of 1933 required that half of the surplus account — \$139 million at the time — be used to capitalize the Federal Deposit Insurance Corporation; in return, the Fed was allowed to retain future net earnings to replenish the surplus. Then, as the economy emerged from the Great Depression, the surplus account grew over the years as the banking sector recovered.

In 1959, the Fed’s Board of Governors decided to update its policy, announcing the surplus account would equal the full legislated allowance equal to the combined value of member banks’ paid-in and on-call capital. Still, as the budget deficit grew in the early 1960s, there was fresh congressional pressure to apply more of the surplus account toward deficit reduction. In response, in 1964 the Board issued another ruling that halved the size of the surplus account, declaring it had to equal only paid-in capital; the other half, which came to \$524 million, was sent to the Treasury as remittances. Several more such transfers occurred in the 1990s. President Clinton’s 1993 budget deal mandated that a portion of the surplus account be sent to the Treasury in the 1997 and 1998 fiscal years, totaling \$213 million. In 2000, Congress passed a spending bill that transferred a far larger sum, \$3.75 billion, and prohibited Reserve Banks from replenishing their surplus accounts until the start of the 2001 fiscal year. Between the Fed’s early years and the 2015 highway bill, however, Congress never passed legislation that specifically addressed the size or function of the surplus account, leaving this matter to the Board instead.

### Revisiting the ‘Carry Trade’

As noted, one common argument that senior Fed officials have made focuses on the issues of Fed independence and fiscal precedent. Some economists point to another risk — one that is tied to the massive amount of liquidity that the Fed put into the banking system through its unconventional

monetary policy. This infusion dates back to late 2008, after the Fed had lowered the federal funds rate to a range of zero to 0.25 percent — effectively to the “zero lower bound” — and sought new tools for stimulus. It turned to making unprecedented amounts of bond purchases as a way to inject more reserves into the banking system and pressure longer-term interest rates (including mortgage rates) lower. Cumulatively, those bond purchases expanded the Fed’s balance sheet from \$800 billion in summer 2008 to \$4.4 trillion today, more than a fivefold increase, while reserves held by banks ballooned from \$25 billion to \$3 trillion. (When the Fed acquires assets, it buys them with newly issued money, namely, bank reserves. So the bigger the Fed’s balance sheet, the greater the amount of reserves.)

Now that there are substantial excess reserves in the banking system, rather than changing the federal funds rate through buying or selling bonds on the open market — as was traditionally done — the Fed is using adjustments to its interest payments on reserves to implement policy changes. In a July 2009 report to Congress, the Fed called this particular authority the most important tool the Fed can use in raising interest rates without shrinking its balance sheet — that is, selling the bonds it currently holds.

By extension, a diminished surplus account could complicate the Fed’s plans to continue lifting rates by giving it less room for adjustment: If interest rates rise in coming years, as the Fed projects, it may choose to pay out more in interest payments on reserves held by banks to prevent the banking system from using excess reserves to rapidly expand lending, which could create inflationary pressures. Accordingly, if interest rates go up quickly or suddenly — say, if inflation spikes — the spread could narrow more than expected between what the Fed takes in as interest earnings (on the securities it bought when yields were low) and the amount it has to pay out as interest on reserves (which will increase as rates rise).

The Fed’s expected path toward “normalization” also implies that the Fed’s interest earnings will diminish in the years to come, assuming it will start shrinking its balance sheet as it has pledged to eventually do. To do this, rather than re-invest the securities it holds, as it has done since 2008, the Fed has stated that it plans to start letting bonds “roll off” the balance sheet upon reaching maturity. This means the Fed’s interest income will decline.

A note of general caution came from Bernanke himself in September 2009, when the FOMC gathered for its policy meeting, as members discussed how the Fed would absorb possible losses during a period of rising interest rates. “We’ll be returning to the Treasury very high levels of seigniorage over the next few years,” he said, noting he had been in talks with Treasury officials. “I think there would be some basis for withholding some of those earnings to augment our capital, so that if we do have losses, we’d be able to absorb them.”

For now, the Fed still plans to re-invest its securities. But taking these factors together, some economists conclude that the Fed may need an extra cushion in the years ahead,



especially if rates rise quickly or suddenly, and that the surplus account should be part of this buffer. In a 2014 paper, “Monetary Policy as a Carry Trade,” economist Marvin Goodfriend of Carnegie Mellon University highlighted this risk and argued that the Fed should watch its own exposure as much as it expects banks to monitor theirs. He described the analogy of the market term “carry trade” — the practice of borrowing cheaper short-term debt to finance longer-term higher-yielding investments — as useful in understanding the Fed balance sheet. A central bank should make sure it has enough net interest income up front so that it can pay for interest costs and risks later on, he concluded.

“The presumption should be that the central bank must be prepared to raise market interest rates against inflation, if need be, by raising interest paid on reserves well before unwinding its carry trade,” Goodfriend wrote. To that end, he argued, the Fed should avoid facing a scenario where it has to create more reserves just to pay interest on its liabilities, which would worsen the cash-flow crunch and possibly even “unhinge” inflation expectations.

Other economists see this scenario as unlikely: They argue that the difference between the Fed’s remittances to the Treasury and its interest payments on reserves is so great that the Fed is unlikely to face a net loss even if interest earnings fall and interest payments increase. For example, the Fed paid banks \$6.9 billion in interest on reserves in 2015, while its total interest income was \$113.6 billion. Moreover, the interest rate on reserves has thus far been well below the average yield paid on Treasuries held by the Fed, many of which have longer-term maturities. For securities averaging 10 or more years in maturity on the Fed’s balance sheet, the average yield is 2.5 percent.

To see what the near and mid-term risks could look like, three economists at the San Francisco Fed, Jens Christensen, Jose Lopez, and Glenn Rudebusch, have modeled alternative interest rate scenarios against baseline forecasts, and in a 2013 working paper they concluded that “the risk of a long or substantial cessation of remittances to the Treasury is remote.” In fact, in almost 90 percent of their simulations, they projected no shortfalls at all through 2020.

Even under scenarios of continuing remittances, however, many economists expect they will drop. A recent

analysis by five researchers at the Fed’s Board of Governors estimating the Fed’s projected remittances to the Treasury through 2020 (under baseline assumptions) forecast a drop in net remittances to \$18 billion in 2018, \$23 billion in 2019, and \$31 billion in 2020. But if interest rates were to rise by 200 basis points (2 percentage points) higher than expected, remittances to the Treasury could fall to zero, according to this model. Noting that 2 percentage points are beyond the historical standard deviation of the 10-year Treasury yield (around 1.6 percent), the authors concluded that “this higher interest rate scenario should be seen as a somewhat unlikely scenario, but not an implausible one.”

For now, there remain two implications that go beyond technical questions of balance-sheet operations. First, it remains to be seen what the political fallout will be if the Fed’s remittances to the Treasury do decline sharply in coming years. The other question is psychological: namely, whether the Fed’s credibility will be weakened as a result of Congress having tapped into the surplus account. This risk to credibility could either take the form of Congress opting for future interventions that could directly affect the Fed’s conduct of monetary policy, or a scenario in which the Fed has to resort to printing money to cover losses that result from such an intervention. In both cases, the Fed’s ability to control inflation would come into question.

Speaking at the time of the last (and far less controversial) surplus-account transfer in 2000, then-Fed Gov. Lawrence Meyer raised the issues of perceptions and credibility. He noted that while the risks to the Fed’s balance sheet had receded over the years, there was still value in maintaining the surplus account, on grounds that it “may help support the perception of the central bank as a stable and independent institution by ensuring that its assets remain comfortably in excess of its liabilities.”

Yellen chose to emphasize this last point, as well, as she testified to Congress in December. “Almost all central banks do hold some capital in operating surplus,” said Yellen. “And holding such a surplus or capital is something that I believe enhances the credibility and confidence in the central bank. ... [W]e don’t have a lot of capital, but we have long had capital in surplus that, I think, creates confidence in our ability to manage monetary policy.” **EF**

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## Reverse Repo

BY TIM SABLİK

Financial institutions engage in a wide variety of transactions to fund their daily operations. Two common transactions are the repurchase agreement, or “repo” for short, and its relative, the “reverse repo.”

Despite its somewhat sinister-sounding name, a repo is essentially just a short-term loan. In a repo, the initiating party sells securities to another party but agrees to repurchase those securities later at a higher price. In this way, the buyer lends funds to the seller, and the securities act as collateral. The difference between the securities’ initial price and their repurchase price is the interest paid on the loan. A “reverse repo” is simply the mirror of the same transaction. In a reverse repo, the initiator purchases securities and agrees to sell them back for a positive return at a later date. Financial institutions typically use repos to obtain short-term funding.

As short-term funding instruments, repos were at the heart of the financial crisis of 2007-2008. Financial institutions rely on being able to roll over their repos frequently — often daily. But the housing market crash and subsequent financial turmoil called into question the true value of many of the securities underlying repos. Financial institutions were suddenly less willing to risk being stuck holding securities of questionable value in the event that the borrower on the other end of their agreement declared bankruptcy. As a result, the repo market temporarily collapsed, and many institutions suddenly found themselves short of needed funding for their operations.

In addition to their use by financial institutions, repos and reverse repos are traditional tools used by the Fed to conduct monetary policy. When the Fed temporarily buys securities from primary dealers (firms that deal in U.S. government securities directly with the Fed) it injects reserves into the financial system. Conversely, when the Fed sells securities with an agreement to repurchase — a reverse repo transaction from the perspective of the market — it temporarily drains reserves from the system.

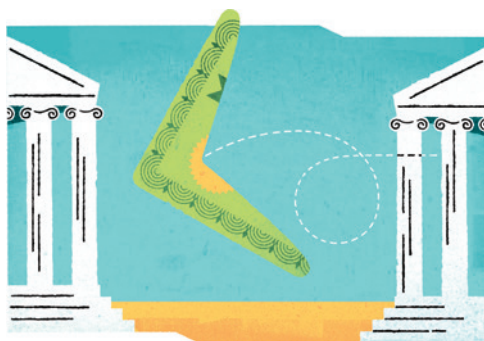
Since the crisis, reverse repos have taken on new importance as a monetary policy tool. This reflects limitations of the Fed’s usual tools in today’s environment. Traditionally, the Fed conducted monetary policy by altering its target for the federal funds rate — the rate banks charge each other to borrow overnight. The Fed supported the new target with a corresponding change in the discount rate (the rate at which it lends to banks) and open market operations like repos and reverse repos. Before the crisis, these operations were

typically small — usually between \$2 billion and \$8 billion.

This traditional approach relied on the fact that banks had little incentive to hold more reserves at the Fed than required because, until late 2008, the Fed did not pay banks anything to hold excess reserves. Rather than hold excess reserves with the Fed and earn zero interest, banks generally preferred to lend those reserves in the fed funds market and earn the fed funds rate. Huberto Ennis of the Richmond Fed and Todd Keister of Rutgers University explained in a 2008 article how the Fed could effect a change in the fed funds rate in this environment through various combinations of open market operations (changes in the quantity of reserves) and changes in the discount rate. But the Fed’s large-scale asset purchases during and after the Great Recession have swelled the level of excess reserves in the banking system from \$2 billion to over \$2 trillion. (See “Are Large Excess Reserves a Problem for the Fed?” p. 40.) Following the traditional approach would require selling (at least) hundreds of billions of dollars of securities, which the Fed does not want to do.

As a result, the Fed has said it will rely on two different tools to steer interest rates. First and foremost is paying interest on excess reserves, which the Fed started doing in 2008. Raising the interest rate on excess reserves gives banks more incentive to hold them, putting upward pressure on short-term market interest rates, including the fed funds rate. But since not all financial institutions hold reserves with the Fed, it will also employ overnight reverse repos with an expanded set of counterparties as a complementary tool to maintain its federal funds rate target. If it is willing to conduct large enough reverse repo operations, the Fed can also effectively set the minimum rate for the overnight repo market, since no other institution will pay less than what the Fed is offering. This allows the Fed to influence what financial institutions charge each other for overnight repo lending, similar to how it traditionally influenced the overnight federal funds rate through open market operations. The Fed has already experimented with using reverse repos in this way.

Still, the Fed plans to rely primarily on interest on reserves rather than reverse repos to achieve its interest rate targets. Fed officials have noted that the Fed’s large influence on the repo market could have unforeseen long-term consequences for how financial institutions borrow and lend in overnight markets. In order to avoid that, the Fed plans to use reverse repos only as long as necessary. **EF**



# RESEARCH SPOTLIGHT

## The Need for (Trading) Speed

BY JESSIE ROMERO

**H**igh-frequency trading (HFT) — using powerful computers and complex algorithms to trade securities at very fast speeds — is the subject of heated debate. Defenders of HFT say it benefits investors by making markets more efficient and more liquid. Critics worry it makes financial markets unstable and stacks the deck against investors who can't afford to invest in high-speed infrastructure.

Those investments are considerable. In 2010, a privately built \$300 million high-speed fiber-optic cable reduced the transmission time between Chicago and New York from 16 milliseconds to 13 milliseconds; according to some reports, trading firms paid as much as \$300,000 per month for access. (A millisecond is one one-thousandth of a second.) Just a few years later, fiber-optic cable seems obsolete, as trading firms have begun using microwave towers and laser beams to shave off additional milliseconds. Other firms pay high fees to locate their servers in the same facilities as securities exchanges' servers; the exchanges measure carefully to make sure one firm's cord isn't a few feet shorter than another's.

In a recent article, Eric Budish and John Shim of the University of Chicago and Peter Cramton of the University of Maryland conclude that this “arms race” for speed is the inevitable result of the market design, which treats time as continuous rather than discrete. In general, exchanges operate based on a limit order book, which constantly matches “bids” to buy a security with “asks” to sell a security. Orders are accepted based on price-time priority: Bids or asks with the most attractive price are accepted first, and ties are broken based on when the order was received. But treating time as continuous creates mechanical opportunities for arbitrage, according to the authors, and gives firms an incentive to invest in speed.

To demonstrate this, Budish, Cramton, and Shim begin by examining data on two securities, the E-mini S&P 500 Futures Contract (ticker ES) and the SPDR S&P 500 exchange traded fund (ticker SPY), between Jan. 1, 2005, and Dec. 31, 2011. The authors find they are nearly perfectly correlated over relatively long intervals, such as a minute, hour, or day. But at higher-frequency intervals, such as a millisecond, the correlation breaks down completely. This creates opportunities for arbitrage: If a high-frequency trading algorithm observes an increase in the price of ES, for example, it can sell ES and buy SPY before the price of SPY has time to change. And since someone is always first, this creates an incentive to be the fastest.

In theory, arbitrage opportunities don't last; once the market discovers them, competition will cause prices to converge. But Budish, Cramton, and Shim find that while the duration of arbitrage opportunities shrank significantly over the course of their study, from a median of 97 milliseconds in 2005 to a median of 7 milliseconds in 2011, the profitability of arbitrage opportunities stayed constant. They write, “The arms race does not actually affect the size of the arbitrage prize; rather, it just continually raises the bar for how fast one has to be to capture a piece of the prize.”

To account for their empirical findings, the authors construct a simple model in which investors and trading firms buy

and sell a security and receive public signals about that security's value (such as the latest price of a correlated security). When there is a change in the signal, a trading firm sends a message to the exchange asking it to cancel its existing quotes for the security and to replace them with new quotes. At the exact same

time, however, other trading firms try to “snipe” the stale quote; that is, they send a message to the exchange to buy or sell the security at the old price. Because the exchange processes the orders serially, there is a high probability that the initial trading firm gets sniped even though all the firms observed the signal at the same time. This raises the cost of providing liquidity to investors, since trading firms must charge a higher bid-ask spread to cover the risk of being sniped.

When the authors modify their model to allow trading firms to invest in speed, the equilibrium result is a socially wasteful arms race. Some firms invest in speed to be the first to snipe, other firms invest to avoid being sniped, and because competition does not eliminate the arbitrage opportunities, the incentive is to continue investing. At the same time, competition dissipates the net rents trading firms can earn, and investors ultimately bear the cost of speed in the form of higher liquidity costs.

Budish, Cramton, and Shim propose ending the arms race by holding batch auctions at discrete intervals, such as 100 milliseconds, rather than processing orders serially. In their model, batch auctions significantly reduce the value of slight speed advantages and eliminate the rents trading firms can earn on symmetrically observed public information. Unlike other proposals to curb the HFT arms race, such as taxes, minimum resting times for quotes, or random delays in processing messages to the exchanges, batch auctions that treat time as discrete rather than continuous could address what the authors view as the fundamental flaw in the system. **EF**

“The High-Frequency Trading Arms Race: Frequent Batch Auctions as a Market Design Response.” By Eric Budish, Peter Cramton, and John Shim. *Quarterly Journal of Economics*, November 2015, vol. 130, no. 4, pp. 1547-1621.

## The Role of Lower-Ranked Economics Ph.D. Programs

BY KARL RHODES

The top 15 doctoral programs in economics dominate the profession — or so it would seem based on research rankings, career outcomes, and alumni winners of the Nobel Memorial Prize in Economic Sciences.

Before World War II, these elite programs, led by the likes of Harvard University and the University of Chicago, faced little competition. But as American universities grew rapidly following the war, the number of Ph.D. programs in economics soared from 24 in 1946 to more than 120 in 1973. Today, the total stands at 140. Despite all this new competition, the same programs — with only a few additions since the war, most notably MIT — continue to dominate many aspects of the profession. This long-standing supremacy has prompted some observers to question the value of smaller, lower-ranked programs.

“What these smaller programs do — more and more as you go down the pecking order — is produce teachers for the many institutions that have large numbers of undergraduate economics classes but little chance of hiring Ph.D.s from the top 15,” says John Siegfried, an economics professor emeritus at Vanderbilt University (generally ranked in the 30s or 40s) who conducts research on Ph.D. programs in economics.

“Bottom-tier” Ph.D. programs (classified as those below the top 48 in Siegfried’s research) generally have lower completion rates. But nearly all of their graduates eventually secure full-time, permanent employment in the field, according to longitudinal research by Siegfried and Wendy Stock, who chairs the economics department at Montana State University, which has no Ph.D. program. Even in the short run, their 2003 survey of 2001-2002 graduates found that 70 percent of graduates from the lowest-ranked programs secured full-time, permanent employment quickly, compared with 89 percent of graduates from the top 15. The average starting salary was substantially higher for graduates of elite programs, and their indicators of job satisfaction were somewhat higher.

Quite a few graduates of bottom-tier programs find jobs in the lower levels of academe, and some of them eventually publish in prestigious journals, but their upward job mobility is limited. John List is a well-known exception to this rule. He earned his Ph.D. at the University of Wyoming (generally ranked in the 60s or 70s) and worked his way up to department chair at Chicago.

Wyoming’s Ph.D. program is among the smallest in the nation, but it ranks No. 11 on Research Papers in Economics’ international ranking of research organizations in the subspecialty of environmental economics. Among American universities on that list, Wyoming joins Harvard, MIT, and Chicago in the top 15.

Small programs can play important roles, says Robert Godby, who chairs the economics department at Wyoming. “But if their resources are very limited, they have to figure out what they do best and maximize their outcomes in those areas.”

Focusing resources is also a key strategy at Emory University, says Tao Zha, who co-chairs the university’s Ph.D. program in economics (generally ranked in the 50s or 60s). Three years ago, Emory suspended enrollment in the program to reassess its comparative advantages. When the program resumes in 2016, it will focus more sharply on econometrics, macroeconomics (including greater collaboration with the Federal Reserve Bank of Atlanta), and applied microeconomics (including greater collaboration with Emory’s public policy institute and other Atlanta-based health organizations).

At no time during Emory’s reassessment did the economics department consider closing the program, according to Zha. “If the university were just a teaching school, then I could understand not wanting to expend the resources on a Ph.D. program,” Zha says. “But if the mission is not only teaching but also to be a leading research institution, then you need to attract prominent researchers. It’s almost impossible to have a good research department without a Ph.D. program.”

Not necessarily, says Robin Dubin, who chairs the economics department at Case Western Reserve University. The department allowed its Ph.D. program to go dormant more than 30 years ago, and today Case Western is the only member of the Association of American Universities that does not have a doctoral program in economics. The association’s 62 members include nearly all of the leading research universities in the United States.

“Having a Ph.D. program certainly would help in recruiting but we have been able to make very good hires without one,” Dubin says. “The people who know us realize that we are an excellent department, and if they are advising Ph.D. students, they encourage them to at least come and take a look.”

Growing numbers of Ph.D. candidates also are taking a look at nonacademic jobs. Employers in business and government — like their counterparts in academe — are willing to pay more to attract graduates from the top 15, according to Siegfried and Stock’s research. But that salary gap narrows in subsequent years of economists’ careers as “rewards for promise evolve into rewards for productivity.”

Sometimes economists are better at modeling things than doing things, but Siegfried puts Muhammad Yunus in his “just-do-it” hall of fame. Yunus completed his Ph.D. in economics at Vanderbilt in 1971 and won the Nobel Peace Prize in 2006 for promoting micro-lending as a way to combat poverty. “He didn’t win a Nobel Memorial Prize in economics,” Siegfried says with a chuckle. “He got a better one.” **EF**

## A Fresh Look at the “Huddled Masses”

BY HELEN FESSENDEN

### Economists are looking at past mass migration waves to understand Europe’s refugee surge

Throughout the past year, images of Europe’s refugee crisis have flooded the news and social media, feeding into heated disputes over crime, terrorism, and cultural identity. On one side, European Union governments are looking to enact tougher controls in coming months amid a growing political backlash. On the other side are those who argue a pro-refugee policy is not just the humanitarian thing to do, but economically advantageous as well. As German Chancellor Angela Merkel famously put it, taking in refugees will require “time, effort and money,” but countries have always “benefited from successful immigration, both economically and socially.”

Although 2015 saw a dramatic spike in arrivals, Europe has been evolving into a global migration destination for more than a decade. In 2013, the EU took in around 1 million permanent migrants, roughly as many as the United States did. Since then, the dramatic surge in refugee flows into Europe has tipped the balance even more. According to the European Union’s statistics office, Eurostat, the EU had recorded around 995,000 first-time asylum applicants from January to October 2015 — twice the total in 2014 — with most in Germany and Sweden (where policy is the most liberal) and Hungary (a key transit country). The actual total of refugees is higher, though, as there is generally a lag between arrival and application. For example, Germany, which has a population of 81 million and has taken in the lion’s share, reported a total of 1.1 million refugees in 2015. (As a point of comparison, the EU’s total population is around 510 million, while the U.S. total is around 320 million.)

There are also less dramatic but equally significant ways in which these immigrants are changing Europe’s demographic and economic future. Faced with a growing labor shortage — both for skilled and unskilled workers — some European governments are speeding up paperwork and making it easier for refugees and asylum seekers to enter the workforce rather than wait in bureaucratic limbo for years. The Organization of Economic Co-operation Development (OECD) has estimated that the volume of immigrants, combined with these policy changes, means that the otherwise stagnant European labor force will rise by 0.4 percent in 2016; in Germany, that increase is expected to be a full 1 percent. Many of these newcomers are young and of prime working age; under one Eurostat estimate, 82 percent of the asylum seekers who registered between from May to October in 2015 were younger than 34.

Amid the heated and unpredictable politics of immigration on both sides of the Atlantic, it is easy to forget just how much economics can drive policy — and just how much the forces shaping immigration often share common features across countries and populations. Policymakers today could find useful insights from one group of economists in particular: those who study migration flows of the past as one way to build on our understanding of immigration of the present. And one of the most important cases is close to home: the “Great Migration” of Europeans to the United States from the mid-1800s to the 1920s.

### An Ideal Case Study

Totaling around 33 million, this mass migration was not just one of the largest population movements of the modern era; it changed the fabric of U.S. society. By 1920, when the U.S. population was 106 million, 28 percent of all Americans had foreign parentage, while another 17 percent were foreign-born.

“If you want to address the basic question of why people move across borders, there’s actually no better subject than the Great Migration,” says Jeffrey Williamson, an emeritus professor of economics at Harvard University and one of the leading scholars of this period. “You don’t need to figure out who’s legal and who’s illegal. You don’t need to control for the effects of policy intervention.”

Among the most important of such policy interventions was a literacy test requirement in 1917 that was followed by far stricter quotas in the 1920s. Until that decade, however, Europeans faced no formal restrictions to U.S. entry except for health, which affected only a tiny minority. Such unfettered flows of labor, combined with the large sample size, make the Great Migration an ideal subject for economists.

“The Great Migration is one of the largest episodes in history, similar to today in terms of number of immigrants to the United States, but larger in terms of percentage of the sending and receiving populations,” notes economist Ran Abramitzky of Stanford University. “The U.S. borders were open to European immigrants, so this is a good setting to test the self-selection of immigrants in a world without policy restrictions. There were also no large U.S. welfare programs at the time, so we can test the assimilation of immigrants in a world without public immigrant support.”

What did these movements look like? With relatively cheap land and a relatively high demand for labor, the United States started to become a magnet for Europeans well before the Civil War. From the 1840s until the 1870s, it absorbed around 200,000 new arrivals a year, with most coming from the British Isles, Germany, and Scandinavia. Inflows increased dramatically in the mid-1870s, as more began streaming in from Southern and Eastern Europe, known as



the “new immigrants.” In 1907, the peak year of immigration, more than 1.2 million entered the United States, about 1 million of whom were the latter group. Taken together, these inflows produced a labor force that was 22 percent foreign-born in 1910, compared with only 17 percent today. There was, however, one very significant exception to this broad freedom of movement: The United States banned immigration from China in 1882, when it had a Chinese population of around 100,000.

The arrivals settled mainly outside the South and gravitated toward cities across the Northeast and Midwest. They also tended to be young and of working age, with relatively high labor force participation. More men than women made the transatlantic journey, too, so that by 1910, there were roughly 13 men for every 10 women among the foreign-born in the United States. Last, they tended to be unskilled, especially in the later waves. In 1900, for example, about 26 percent of “new” immigrant males were illiterate, compared with 2 percent of native men who lived outside the South. Some economists argue that these unskilled workers made up a large share of those who returned to their home countries, which may have amounted to 30 percent of all immigrants during the peak years.

The rising numbers of immigrants coincided with growing sentiment to curb immigration. In 1907, a government report concluded that new migrants lowered wages, worsened unemployment, and had not assimilated. After a long string of attempts to impose restrictions, Congress passed in 1917 a literacy test requirement, overriding a veto by President Woodrow Wilson. The literacy test then paved the way for subsequent legislation imposing much stricter quotas. In 1924, the United States set an annual cap of 150,000, with most allotted for migrants from Northern Europe. The Great Migration slowed to a trickle. It was not until the 1960s that the United States overhauled its policies, relaxed its country-of-origin restrictions, and became a nation of immigrants again, this time with a predominantly non-European influx.

### Push and Pull

At first glance, the history of mass migration contains many puzzles. Oftentimes the poorest populations do not migrate at all, even though they presumably have the most to gain. And the ebb and flow of immigration appears to occur at different times of a recipient nation’s income growth, along different patterns. Confronting these questions, scholars have looked to the wealth of data offered by the Great Migration.

In case the case of Europe today, a primary and obvious driver of migration is war. But throughout history, economics and demographics have been equally powerful forces. Williamson, joined by Timothy Hatton of the University of Essex in England, has constructed a model framing immigration as a “life cycle” that can explain flows across continents and centuries. They first analyzed data from the Great Migration to locate the main drivers of migration, and then they applied them to more recent examples. Among their most important findings was that a wage gap between rich and poor countries alone is not sufficient to induce an immigrant to leave; instead, he or she has to reach a certain threshold of income to afford the journey in the first place. In the European case, it took decades of slowly rising wages before some of the poorest populations could afford leaving the “poverty trap,” even though the United States was already known as a migrant destination; this finding also can explain why modern-day populations in the world’s poorest regions, such as sub-Saharan Africa, often stay in place.

This wage gap, however, is also tied to a strong “friends and relatives” effect, according to Hatton and Williamson. The bigger the immigrant network in the destination country, the more likely it is to help pay for the voyage and the initial costs of the job hunt. Because this network provides a de facto subsidy for relocation as well as a social safety net, it means that the home-country wage becomes less important to the decision to leave as the immigrant network becomes bigger, especially if transportation gets faster and cheaper (as was the case in the 19th century, with great advances in steam and rail travel). This network effect can also be seen in flows from Latin America to the United States since the 1970s.

Williamson and Hatton also stressed the role of demographics: The bigger a country’s “youth bulge,” the higher the emigration rate. In the case of 19th-century Europe, new pressures emerged as the death rate declined and more children survived infancy. Once these relatively larger cohorts of children became young adults, more and more looked abroad for work as their numbers at home outstripped the number of jobs available, especially in agriculture. This driver was reinforced by another trend: Rising literacy helped accelerate the flows, as the younger workers in the poorest populations in Europe were better able to learn about migration opportunities. This was especially the case in Southern and Eastern Europe, where primary schooling finally spread in the late 19th century.

When did this cycle ebb? Hatton and Williamson noted

that policy changes can have a significant impact, as was the case with the United States in 1920s. But economic factors also exert a powerful force. Rising home-country wages and rising labor demand created by European industrialization eventually contributed to a slowing of migration flows from Northern Europe, as more workers stayed home and found work in factories and cities. Wages in the poorer European countries converged with U.S. wages and with wealthier regions in Western Europe, such as Britain. Then, as now, immigration slowed once a relatively poor region had graduated to the middle-income tier.

This model is among the best known in the literature and is often cited in the context of more recent episodes, for example, the gradual ebb in migration from Latin American countries, where the youth population has fallen since it peaked in the 1980s. It also has a more surprising application to cases such as the flows of 1.5 million Russian Jews to the United States as part of the Great Migration, which is often assumed to be a case of migration driven mostly by persecution and violence. According to research by UCLA economist Leah Boustan, the anti-Jewish pogroms that started in the late 1800s did affect the timing of movements. But this particular case also shared economic and demographic drivers similar to contemporaneous cases of European out-migration, such as business cycles at home and in the destination, as well as the growing “network effect” as Jews settled in the United States.

### Who Wins, Who Loses?

Broadly speaking, macroeconomic theory is fairly sanguine about the effects of migration. In the short run, it holds, migration tends to boost growth in the recipient nation by increasing the labor supply, domestic demand, and net fiscal outlays. A larger labor supply also boosts growth prospects in the long run. In addition, capital will tend to chase labor to yield higher returns, adding to the economic gains. However, such disruptions inevitably come with winners and losers, particularly in the short run. In this context, labor markets, especially wages, have dominated economic research. It is relatively easy to quantify such gains and losses in these studies, and, in the case of historical movements such as the Great Migration, there also are abundant data.

Economists tend to agree that the effects of immigration on native and migrant wages alike depend crucially on the skills of immigrants relative to the skills of the recipient population. If the new supply of labor complements native factors of production, both groups should become more productive. If they're substitutes, however, native labor that is more expensive than migrant labor is likely to be displaced. This theory builds on a long-established economic model — known as the “Roy model” — that maintains that migration is driven by the return on an immigrant's skill level, and these returns, by extension, are shaped by the relative income equalities of the sending and receiving nations.

Measurement is hard, however, because migration, especially on a mass scale, shifts economic activity across industries and regions over time. Moreover, these effects will naturally

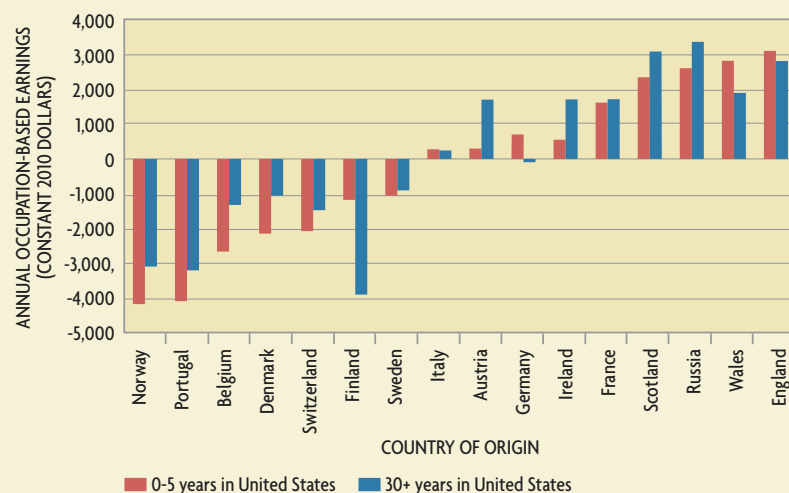
differ across regions, industries, and nationalities. In short, the wage impact is only one part of a much bigger picture. But most work still focuses on wages rather than broader macroeconomic effects. Along with the availability of data, another reason for this concentration is that, at the time of rising anti-immigrant sentiment before World War I, one of the most common arguments for imposing curbs was that these inflows of Europeans drove down Americans' wages. Looking back at this legacy, economists have tried to use modern tools and richer data to answer this debate objectively.

One of the most famous studies was conducted by economist Claudia Goldin of Harvard University, who did research in the 1990s that looked to the Great Migration to analyze immigration's wage impact from the 1890s until the imposition of the literacy test in 1917. Looking across professions and their percentage of foreign-born workers, Goldin found a persistent, though slight, negative effect. Noting that the “new” immigrants from Southern and Eastern Europe tended to be low-skilled, she concluded that, starting in 1890, each 1 percentage point rise in the immigrant population in a particular city corresponded with a drop in wages of 1 to 1.5 percent for all workers. The wage effect was especially pronounced in sectors dominated by immigrants, such as men's clothing and foundries, while sectors that were dominated by native-born and highly skilled workers did not see this effect. Moreover, wages tended not to suffer as much if a growing immigrant population translated into higher local demand for a product made by immigrants; bakers and bread are one good example.

As other economists have noted, however, wage effects alone don't capture the entire picture of immigration's impact, especially on a national level. In the case of the Great Migration, they have found that capital flows tended to follow labor flows from the Old World to the New as they were pulled by the latter's natural resource endowment; over time, the infusion of capital lifted the return on labor. These forces helped offset the negative pressure on wages among lower-skilled workers, and, more broadly, fueled the rapid pace of industrialization and urbanization in the United States during the late 19th century.

One study by the economists Williamson, Hatton, and Kevin O'Rourke illustrates this effect dramatically. They found that if immigration had stopped in 1870, the resulting labor scarcity would have been so profound that it would have raised the 1910 wages by 24.7 percent. That model assumes, however, that capital flows would have been unchanged, when in fact they closely responded to the surge in labor supply. In a second simulation that realistically adjusts capital flows to take into account labor-force growth, the wage effect would have been far less, around 9 percent. As capital chased labor in a tightly integrated international capital market, then, capital flows from Europe significantly countered the downward pressure on U.S. wages. As the study put it, much of the capital headed to the United States “would have stayed home had international migration been suppressed.” Moreover, without the acceleration of capital

## Earnings Gap Between Native- and Foreign-Born Workers in the U.S.



**NOTE:** This chart shows the changes in annual occupation-based earnings among immigrants who arrived in the United States between 1880-1900 in both the short and long run. In general, immigrants from poorer sending countries, such as Norway and Portugal, started in lower-paying jobs, saw modest gains, but did not catch up to U.S. median wages after 30 years. By contrast, immigrants from wealthier sending regions, such as England and Wales, started out and stayed in higher-paying jobs. "Russia" refers to the Russian Empire. The researchers believe Finland may be an outlier because the country experienced a severe famine in 1868-1869, so the "negative selection effect" of early Finnish migrants may have been especially strong — that is, they were low-skilled workers who left for the United States only to escape starvation.

**SOURCE:** Abramitzky, Ran, Leah Boustan, and Katherine Eriksson, "A Nation of Immigrants: Assimilation and Economic Outcomes in the Age of Mass Migration," *Journal of Political Economy*, 2014, vol. 122, no. 3, Figure 3, p. 490. Data provided by authors.

## Getting Personal

The studies noted above look at immigration's effects on the native population and the economy. But what about the immigrants themselves? Did their wages converge with natives' over time? And were they better off after arriving in the New World, compared with those who stayed at home? These questions are getting a closer look these days as economists gain access to much more personalized data on this era from the U.S. Census. Under Census rules, information on individuals can be released after 72 years. This means that, rather than looking at a group of immigrants in a given year, economists can assemble and study data sets that follow the same individuals across decades, including the decades of peak immigration and the years thereafter.

"We can look at whether people stayed or left their country of birth, compare siblings who move or stay, and follow immigrants and their children in the United States over time," explains Abramitzky. "This improves our understanding of the immigrant population, their motives for migrating, and how they fared in the United States."

In one example of this approach, Abramitzky, joined with Boustan and Katherine Eriksson of the

flows that followed the surge in labor supply, the rise in U.S. output likely would have been far more muted.

More recently, some economists have been trying to take on even more ambitious questions of immigration's macro-economic impact over the long term. Two scholars at the London School of Economics — Andrés Rodríguez-Pose, a professor of economic geography, and researcher Viola von Berlepsch — conducted a study with a very wide lens, looking at how the impact of immigrant flows into U.S. counties during the Great Migration was reflected in GDP growth more than a century later. To do this, they gathered Census data from 1880, 1900, and 1910 to see how migrants settled at the county level throughout the United States; then, they compared those data with county GDP data in 2005. In addition, they controlled for factors that may have influenced migrants' decisions to move to particular counties, such as mean income, education levels, and urbanization. The conclusion: The most durable factor positively affecting GDP in 2005 — more so than any other "pull" forces — was the extent a county was settled by immigrants a century or more earlier. That is, whether or not migrants' descendants remained present in a particular county, some institutional imprint established by the original immigrants had a much more powerful economic impact over the long run than the socio-economic advantages offered by the county at the time.

"Regardless of the training and origin of migrants, migration waves leave a big and very long-lasting legacy of economic dynamism and growth," says Rodríguez-Pose. As for today, he adds, "this is something that Europe, with its aging population and structural economic problems, cannot do without."

University of California, Davis, created a dataset of 21,000 individuals to measure wage convergence between immigrants and natives. Two key questions they addressed: Whether the immigrants who left for the United States had higher or lower skills relative to the native population, and whether the wages of immigrants and natives converged over time. This study also tried to correct a selection effect that has long concerned economists: How does one control for the fact that, over time, a growing percentage of new arrivals in the Great Migration were lower-skilled, and that it was likely that the lower-skilled predominated among the many migrants who returned to Europe? If an economist is studying a cohort that arrived in 1890 and stayed, the finding that this group's average wages were higher than those who arrived in 1900 may not mean that there was actual wage convergence — it could just mean that the 1890 group was higher-skilled to begin with, and those who stayed were the higher earners.

Abramitzky and his co-authors found backing for this intuition. They also discovered that rather than converging with native workers' wages, immigrants in the Great Migration followed parallel professional trajectories. Migrants from higher-wage countries in Europe, and with higher skills, took better paid jobs upon arriving in the United States; subsequently, their wage growth tracked that of higher-earning natives. In contrast, migrants from poorer sending countries took lower-paying jobs than their U.S. peers and stayed in those jobs. Over the course of 30 years, in fact, there was very little movement on wages either way, suggesting that the skill level upon arrival was a key factor in long-term earnings (see chart).

The analysis of micro data leads to other important findings as well, especially regarding migration's impact on earnings of



individuals. The same researchers conducted another study, this time on 50,000 Norwegian men from 1850 to 1913, to see who was most inclined to emigrate, and whether they were better off. Indeed, poorer men were more likely to migrate to the United States than better-off members of their family. And notably, everything else being equal, a typical immigrant from urban areas saw a net gain of 70 percent more in earnings compared with brothers who stayed in Norway.

### The New Wave

In some respects, drawing lessons from the Great Migration to modern day Europe has limits. One key difference is that immigration policy in Europe (and around the world) is tightly regulated and restricted, as is asylum policy. Clear definitions divide legal from illegal groups. European economies also have well-established safety nets, including laws on minimum wage and provisions for unemployment insurance, in contrast to the United States before the New Deal. The current environment, in short, is far from the “pure” observation that the Great Migration has offered to scholars.

That said, as the refugee surge into Europe has prompted economists to analyze the impact of these flows, some factors stand out today as they did in the past. For example, a recent International Monetary Fund (IMF) report highlighted the importance of refugees’ skill levels — and their subsequent development through integration — as one key determinant in how much a European economy gained from immigration. On the one hand, its authors noted, the existing community of immigrants in Europe who came from the “surge” countries (Syria, Afghanistan, etc.) have, on average, a smaller percentage of college-educated workers than do native European workers. On the other hand, incomplete data on very recent arrivals from Syria suggest that the share of college-educated is roughly the same as native levels, slightly above 20 percent. To underscore why this matters so much, and why more current data are needed: An IMF economist who analyzed long-established immigrant communities in Germany found that education, as well as language and job-skill development, were the most critical factors in reducing the otherwise significant gaps over 20 years between Germans and immigrants in earnings, unemployment rates, and labor force participation.

The question of labor market integration also plays out in how much this new mass migration will lift European GDP. The IMF researchers estimated that immigration is providing a modest boost to growth, but in the medium run,

these projections diverge substantially depending on whether there is anticipated to be significant labor market integration. For example, by the year 2020, this roughly came to an 0.18 percent increase in annual GDP without strong integration versus about 0.22 percent with. The boosts to GDP come mainly through the increase in aggregate demand and government spending, but given that the inflows vary considerably by country, the GDP effects vary as well, with the major receiving nations of Germany, Sweden, and Austria seeing far greater effects. Finally, these inflows are also important in the demographic context at a time when declining birth rates across Europe are translating into an aging workforce and a shrinking population. In fact, according to a preliminary estimate by the OECD, migration accounted for the entirety of EU population growth in 2015.

Hatton, whose recent work includes an analysis of refugee flows into the OECD countries, notes that the current crisis requires a recasting of sorts of his well-known model. For example, networks still exert a “friends and relatives” effect in determining where migrants try to settle. But the extent of welfare support in the receiving countries, or their unemployment rates, matter relatively little to asylum seekers, because their primary goal is to flee violence and resettle, not seek economic gains. Economic drivers do influence refugee flows, he has found, but the effect is far weaker than, say, war or oppression.

To Hatton, these findings suggest, among other things, that refugee migrations to Europe will continue unabated unless Europe ramps up its financial support to transit countries such as Turkey and Lebanon so that they are better able to manage resettlement and repatriation strategies in the long run; while not sufficient by itself, he sees this as one way to reduce the flows of refugees who see no other choice but a risky trip to Europe. A harmonized EU policy on accepting asylum seekers, rather than one relying on a small number of recipient countries (as is now the case), is also part of this proposal. Above all, he argues, Europe’s leaders need to distinguish between asylum policy and immigration policy — that is, separate humanitarian imperatives from economic needs.

“Refugee policy is about helping the individuals who are in danger, and there is public support in Europe to come to their aid,” he says. “Immigration policy is primarily about helping the economy, and deciding how the economy is best served by a certain group of workers. If we don’t solve the two issues on separate tracks, we risk losing public support for both.” **EF**

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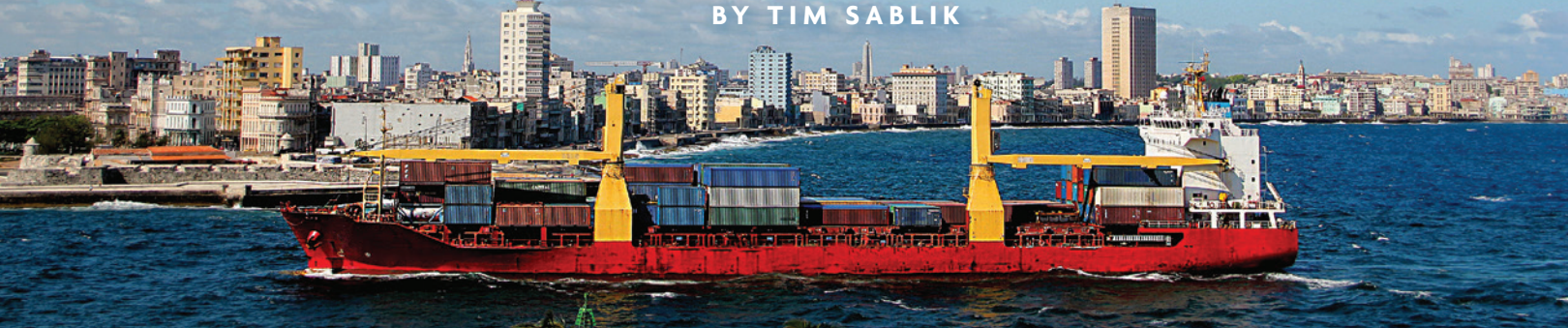
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# TRADING WITH CUBA

As U.S.-Cuban relations begin to thaw, agricultural exports from Southern states may provide a hint of what future trade will look like

BY TIM SABLİK



It's about a three-day trip by sea from Norfolk to Havana. In spite of the long-standing ban on trade and travel between the United States and Cuba, cargo ships have made that journey numerous times over the last 12 years. In 2015, Virginia exported \$41.6 million in agricultural goods to Cuba, just over a quarter of the U.S. total.

"The types of agricultural products that the United States exports to Cuba are very similar to the ones that it exports in general," says Steven Zahniser, an economist with the U.S. Department of Agriculture (USDA). For Virginia, that has included, among others, soybeans, chickens, and apples.

Such exports are made possible by the Trade Sanctions Reform and Export Enhancement Act of 2000, which exempted certain foods, medicines, and medical equipment from the Cuba embargo. Virginia was an early participant in the new avenue for trade and, along with other Southern states like Louisiana, Alabama, Georgia, and Florida, has consistently been one of the top U.S. exporters to Cuba (see chart). In 2003, then-Gov. Mark Warner sent the first Virginia trade delegation to Cuba, and subsequent governors have continued to build on that relationship. Todd Haymore,

currently Virginia's secretary of agriculture and forestry, has led those efforts since 2007.

Haymore says he has long hoped that cultivating relationships between Virginia and Cuba will put the state "at the front of the line" for new opportunities in the event that the embargo is lifted. "As we started to talk more with American and Cuban officials, we sensed that it was not a matter of 'if' but 'when' things were going to change," he says.

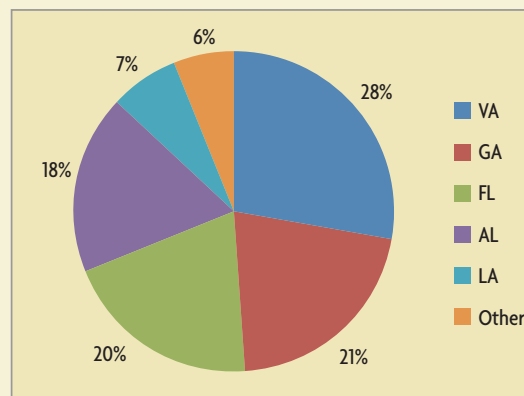
"When" may be sooner rather than later. In December 2014, President Barack Obama announced a number of changes to U.S.-Cuba relations, including easing sanctions and travel restrictions. In the summer of 2015, the two nations resumed diplomatic ties and the United States reopened its embassy in Havana. As a result, many additional businesses are now eagerly eyeing expansion into the Cuban market. But for latecomers, how challenging will it be to open economic doors that have been shut for 55 years?

## A Sweet Start

Before the embargo, the United States and Cuba had a long history as trade partners. In the mid-19th century, Cuba dominated the world sugar market, producing an estimated one-quarter of the world's sugar. The United States, less than 100 miles away and with a comparatively much smaller sugar-producing sector, was a natural importer. The ties between the two countries strengthened in 1884 when world sugar prices plummeted, forcing a number of Cuban mills into bankruptcy. American firms invested heavily in revitalizing and modernizing the sector. In fact, these economic ties may have played a role in America's decision in 1898 to support Cuba's war of independence against Spain.

After the war, the United States and Cuba continued to trade heavily. Between 1902 and 1920, Cuban sugar exports more than tripled, with nearly all of that volume destined for the United States. During this same period, the United States continued to invest in the Cuban agricultural sector. According to a 1999 article by Alan Dye of Barnard College and Richard Scotte of the University of Vermont,

Shares of U.S. Agricultural Exports to Cuba in 2015



SOURCE: U.S. Census Bureau trade data, U.S. state export data

the United States invested more than \$5 billion in Cuban agriculture between 1896 and 1957 (\$67 billion in today's dollars). By the mid-1920s, U.S. firms owned more than 60 percent of Cuba's sugar production. Cuba, in turn, was a major importer of U.S. agricultural products, particularly long-grain rice.

But that outward cooperation masked underlying tension. As a precondition for removing its troops following the Spanish-American War, the United States insisted that Cuba relinquish its authority to approve foreign treaties. Cuba was also required to lease land to the United States for naval bases, including the one still at Guantanamo Bay. While some of these provisions were eventually repealed in the 1930s, they angered many Cubans who had fought for independence.

During the Great Depression, the United States introduced new tariffs and quotas, including on sugar. This contributed to a collapse of the Cuban sugar industry, which was still heavily reliant on exports to the United States. Dye and Sicotte cite this breakdown as a key motivating factor of the Cuban revolution of 1959, which, among other things, sought to reduce Cuba's economic dependence on the United States.

When Fidel Castro's regime came to power, he nationalized private property and assets belonging to American individuals and companies. In response, President Dwight D. Eisenhower imposed a partial embargo in 1960 and cut diplomatic ties in January 1961. Following the Bay of Pigs Invasion in 1961 and the Cuban Missile Crisis in 1962, President John F. Kennedy strengthened the embargo to include all goods and instituted a ban on travel and financial transactions between the two countries. While President Jimmy Carter allowed travel restrictions to lapse, they were reinstated under President Ronald Reagan, and the embargo as a whole remained largely unchanged throughout the 20th century.

### Trade as a Weapon

Sanctions or embargoes have a long history of being used either to punish enemy states or to apply pressure on the leaders of those states through nonmilitary means, with varying degrees of success. (See "Under Pressure," *Econ Focus*, First Quarter 2013.) In the United States, sanctions became a popular policy tool in the aftermath of World War I, coinciding with America's rising economic importance. The Trading with the Enemy Act of 1917 gave the president the authority to impose trade and financial restrictions and seize property of countries deemed hostile to the United States. Cuba is the last remaining country still subject to that act — North Korea was removed in 2008.

The initial trade restrictions against Cuba in 1960 were designed to retaliate against the Castro government's seizure of U.S. property and assets and to discourage its close ties with the Soviet Union. But to many, the Cuban embargo has served as an illustration of why trade sanctions are often ineffective: It is very difficult to completely cut a country off from world trade without widespread support. For example, while many other countries in the Americas initially joined

### Exports to Cuba (\$Millions)

Country	2000	2005	2010	2014
Venezuela	1010.9	1901.68	3444.65	3491.58
China	257.26	698.87	1173.02	1169.45
Spain	613.84	660.28	850.55	994.25
Brazil	104.03	270.05	456.36	558.56
Canada	228.84	407.93	417.09	445.62
Mexico	230.13	243.75	338	398.52
Italy	275.08	269.53	268.63	329.59
United States	3.41	397.87	407.55	328.97
Argentina	58.32	106.52	97.15	300.02
Germany	70.92	348.73	226.04	261.33

SOURCE: International Monetary Fund, *Direction of Trade Statistics*

the United States in sanctions against Cuba, they lifted those restrictions in 1975.

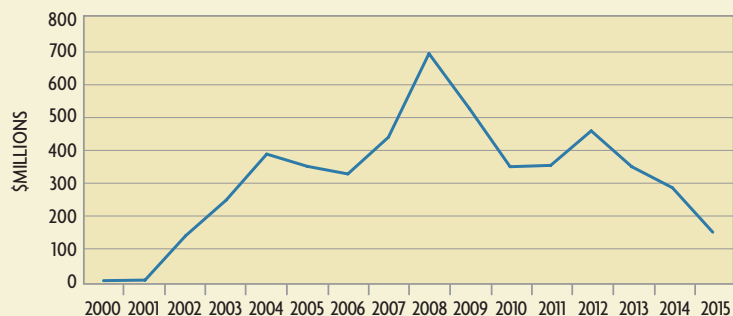
More importantly, from the 1960s through the 1980s, Cuba traded heavily with the Soviet Union. According to a 2002 article by William LeoGrande of American University and Julie Thomas (now Julie Mazzei) of Kent State University, as much as 70 percent of Cuba's trade was with the Soviet Union in the 1970s and 1980s. Between 1960 and 1990, the Soviet Union financed Cuba's trade deficit by providing more than \$17 billion in credit, as well as billions of dollars per year in other economic assistance, according to LeoGrande and Mazzei. This helped to shield Cuba from the effects of the American embargo until the dissolution of the Soviet Union in the early 1990s.

When the Soviet Union collapsed in the early 1990s, Cuba's economy entered a severe downturn. The United States responded by strengthening the embargo with the goal of pressuring the Castro government to engage in democratic reforms and improve human rights. As outlined by the U.S. State Department, abuses by the Cuban government include maintaining single-party rule through force, restricting free speech through arrests and intimidation, and denying fair trial and religious expression, among other things. The Helms-Burton Act of 1996 also attempted to pressure other nations to refrain from trade with Cuba by threatening legal action against firms or individuals who engaged in transactions involving property (physical or intellectual) that was confiscated from U.S. firms or individuals by the Castro government. The United States has also blocked individuals from entering the country for the same reason.

Still, it is not clear how effective these measures have been at actually preventing other countries from trading with Cuba. According to a 2014 book by Gary Clyde Hufbauer and Barbara Kotschwar of the Peterson Institute for International Economics, Cuban trade with countries like China, Venezuela, Canada, and some European countries grew considerably over the last two decades (see table).

The United States itself has also not been fully committed to blocking Cuban trade, as evidenced by its agricultural

## U.S. Agricultural Exports to Cuba



SOURCE: U.S. Census Bureau trade data

exports. Despite a number of financial restrictions, such as the requirement that buyers in Cuba must pay with “cash in advance” and route all transactions through a third-party institution in Europe or elsewhere, U.S. agricultural exports have at times been fairly substantial. According to the USDA, Cuba imported nearly \$700 million in goods in 2008 (see chart). From 2012-2014, the United States was Cuba’s second-leading supplier of agricultural imports (behind the European Union). And even before such exports were allowed in 2000, a U.S. International Trade Commission report found that the embargo had minimal impact on most sectors due to the availability of substitute trade partners for both the United States and Cuba.

Still, proponents of the embargo say that it is a powerful bargaining chip for pressuring the Cuban government to engage in political and humanitarian reform. On the other hand, critics have argued that the embargo has in fact done more harm than good when it comes to furthering those goals. A 2009 Amnesty International report called for lifting the embargo, citing evidence of its negative impact on “the economic and social rights of the Cuban population, affecting in particular the most vulnerable sectors of society.” And a number of economists and political scientists have long argued that, rather than encouraging political reform, sanctions can actually empower oppressive regimes by providing a convenient scapegoat.

“The problem is that when you have a big country like the United States punishing a small, poor country like Cuba, it’s very easy to portray that as not very nice,” says Ricardo Torres, an economist at the University of Havana. “It generates a lot of sympathy for Cuba. And that in itself distracts people from what should be the real focus, which is the working of our economic policies.”

### It Takes Two to Trade

Even if the United States ended the embargo with Cuba tomorrow, it’s not clear how willing or able Cuba would be to take advantage of such an opening.

Following the collapse of the Soviet Union and the tightening of the U.S. embargo in the early 1990s, the Cuban government declared a “special period” and pursued a number of economic reforms. These measures included legalizing self-employment for a small subset of occupations, opening

public farmland to semiprivate cooperatives, and easing travel restrictions in and out of Cuba to boost the tourism industry. The government also allowed property ownership by foreign joint ventures to help attract more outside investment. According to Hufbauer and Kotschwar, Cuba entered into investment treaties with 61 countries between the early 1990s to early 2000s, and by 2011 there were 245 joint ventures with countries such as Spain, Italy, and France.

But these reforms were short-lived. In the early 2000s, Cuba backed away from more economic openness and began to rely more heavily on economic aid and subsidized trade with allies like Venezuela to cover any economic shortfalls, as it had in the past with the Soviet Union. Such subsidized trade relationships with ideological allies could pose a problem for any American businesses looking to trade with Cuba in the future — although falling oil prices and recent political changes in Venezuela seem likely to diminish its support of Cuba.

In the early 2000s, the Castro government also renewed its limitations on self-employment and imposed new taxes and regulations on foreign investment. “In Cuba, you hear everyone talk about the ‘internal embargo,’ which refers to the self-inflicted policies that do not allow the economy to expand beyond a very limited fringe,” says Carlos Seiglie, a professor of economics at Rutgers University-Newark, and president of the Association for the Study of the Cuban Economy. “These policies don’t take advantage of Cuba’s human capital at all.”

Indeed, skill mismatch is prevalent in the Cuban economy. Despite Cuba’s high education level — the World Bank claims that Cuba has a literacy rate of nearly 100 percent and that roughly 50 percent of the college-age population had attended college or a trade school after high school in 2013 — it is not unusual to find individuals with advanced degrees driving taxicabs or working in hair salons. Such mismatch hurts the Cuban economy and thus limits its capacity to import goods.

A related issue is Cuba’s dual currency, adopted in 1994. Some industries use the convertible Cuban peso (CUC), which is pegged to the dollar, while others use the Cuban peso (CUP), which trades with the CUC at about 25:1. This dual currency system introduces a number of distortions into the Cuban economy and complicates trade and national accounting. In 2013, the Cuban government announced a plan to unify its currencies, but it has not yet set a date for the transition.

Another factor that may limit Cuba’s ability to trade with the United States is its limited ability to earn foreign exchange through exports. “If their purse isn’t very heavy, so to speak, they won’t be able to import very much,” says Zahniser. Many of the industries that once made up the bulk of Cuban exports to the United States, like sugar, have deteriorated in recent decades. Hufbauer and Kotschwar estimated that Cuba’s sugar production has fallen from 82 million metric tons in 1990 to 15 million metric tons in 2012. Additionally, the U.S. quota on sugar represents another barrier to Cuban exports.

Still, Cuba has recently made some efforts to resume economic reforms and open the door to new foreign investment

and trade. Under Raúl Castro, the Cuban government began relaxing restrictions on the sale of private property and private land ownership in 2008-2012. The Cuban government has also worked to repair its trade deficits with other countries, re-entering negotiations late last year with the “Paris Club” (a group of 15 creditor nations) to restructure the \$16 billion in debt Cuba defaulted on in 1986.

Economic and legal negotiations would also be a crucial component of any future trade with the United States. The Foreign Claims Settlement Commission, part of the U.S. Department of Justice, recognizes almost 6,000 claims by firms or individuals on property confiscated by the Cuban government. These claims total nearly \$2 billion, not including any interest that may have accrued since 1960. For its part, the Cuban government has claimed \$121 billion in economic damages resulting from the U.S. embargo. U.S. and Cuban firms also separately claim ownership of trademarks for a number of popular Cuban products, such as Havana Club rum. Still, even on this front things may be moving forward. In December, U.S. and Cuban officials met for the first time to begin discussing claims, and the U.S. Patent and Trademark Office recently ruled that a Cuban government company was the rightful owner of the Havana Club brand.

But in other ways, the Cuban government has been more hesitant. “There’s enormous euphoria on the part of U.S. businesses to work in Cuba, but the Cuban government has not made much effort to engage them,” says Seiglie. “And some in Cuba are concerned that they’re going to lose out on an opportunity as the euphoria dissipates.”

It is a real possibility. While public opinion for ending the embargo has been steadily growing (a Gallup poll last year found that nearly 60 percent of Americans favored ending it), the political climate in the United States is less certain. The Helms-Burton Act codified the embargo into law, meaning that ending it would require an act of Congress, an unlikely scenario before the next election. That means the incoming president could reverse the moves made by President Obama. But many, like Haymore, are cautiously optimistic that pressure from businesses and the electorate will eventually force a change.

“Do I have a timetable or crystal ball? No. But it would be shocking to me to see a huge backpedaling at this point,” says Haymore.

## Farmers Lead the Way?

Some American businesses have already started making new inroads into Cuba. At the end of last year, commercial airlines announced plans for regular flights between the United States and Cuba, in response to the Obama administration’s easing of travel restrictions. Tourism to Cuba in general is up — a combination of curious Americans visiting for the first time and other foreigners hoping to see Cuba before it changes too much. A number of U.S. telecoms, such as Sprint, have signed deals to provide roaming services to foreign tourists. The United States also announced last December that it will resume regular postal service with Cuba.

Agricultural firms have a 15-year head start, which provides some insight into the rewards and pitfalls that await other U.S. businesses. They have contended with restrictions from U.S. officials on the one hand and the largely state-directed Cuban economy on the other. Still, Zahniser and his co-authors at the USDA estimate that, if the remaining financial and travel restrictions are lifted, agricultural exports to Cuba stand to grow quite a bit. (In January 2016, the Treasury and Commerce departments lifted most restrictions on financing of authorized, nonagricultural exports to Cuba). They highlighted the Dominican Republic, a country in the Caribbean with similar population and purchasing power, as a possible comparison. Between 2012-2014, the United States averaged \$1.1 billion in annual agricultural exports to the Dominican Republic, more than three times what it exported to Cuba in that period.

Haymore continues to build agricultural trade ties with Cuba; he began the year with another trade mission to Havana, which also included a number of nonagricultural businesses in Virginia looking to enter Cuba. “The Cubans are going to be overwhelmed with U.S. companies interested in exporting again,” he says. “I think that’s why what we have been doing for the last twelve years is so important. We’re a known quantity. We have a trusted relationship. I think Virginia companies who are exporting now and those who are interested in exporting in the future will be able to take advantage of that.”

But, like Haymore, Torres cautions that change is almost certain to come gradually. “These two countries have been apart for a long time, so the legal and physical infrastructure for transactions between the two is not there,” he says. “It will have to be rebuilt from scratch.” **EF**

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# A Territory in Crisis

**Puerto Rico's unique relationship with the United States is shaping what the island can do to resolve its debt crisis**

BY FRANCO PONCE DE LEON

It was a turbulent 2015 for cash-strapped Puerto Rico. Gov. Alejandro Garcia Padilla announced in June that without a restructuring deal, the island would not be able to repay its roughly \$72 billion in debt. Five weeks later, one of its public corporations defaulted for the first time in the island's history. Speculation has been rampant about when the next default might occur and whether Puerto Rico will be forced to cut services and benefits. It has met most of its payments since by shifting funds from one creditor to another and tapping into sources such as its pension fund. But Puerto Rico's leaders warn that the debt is unpayable.

What sets Puerto Rico's crisis apart from other infamous government debt crises of recent years is its status as a territory of the United States. Although the island is not a U.S. state, in many ways it functions as one. Its 3.5 million residents are U.S. citizens who are subject to many U.S. federal laws and taxes, and the island exercises sovereignty in many of the same matters that states do, but without some of the same benefits. For instance, U.S. states can seek protection for their financially troubled municipalities and related entities under Chapter 9 of the Bankruptcy Code, which facilitates a debt restructuring process. Puerto Rico is excluded from this form of protection, a policy its leaders are urging U.S. lawmakers to change.

Regardless of whether bankruptcy becomes an option, Puerto Rico's status as a territory complicates its next moves.

## Which Way Out?

There are three basic ways out of debt: repay it, renegotiate it, or default.

As its debt mounted in recent years, Puerto Rico undertook measures to repay its debt, including decreasing the number of government employees (the total count has dropped by one-fifth since 2009) and raising its sales tax. In addition, Garcia Padilla announced plans in September 2015 to drastically cut spending and called for the creation of a financial control board along the lines of those established for Washington, D.C., in the 1990s and New York City in the 1970s.

A control board is a panel appointed to restore fiscal imbalances, taking the power out of the hands of elected officials who might be tempted to divert funds to current spending rather than repaying debt. In the case of D.C.'s board, which existed from 1995 through 2001, the federal government also assumed certain obligations until the District achieved and maintained a balanced budget. New York's board cut tens of thousands of jobs, froze wages, and raised taxes. Control boards have been quite successful but are not

a silver bullet, says University of Pennsylvania Law professor and bankruptcy expert David Skeel. "The value of a control board depends heavily on how much authority it has and the quality of the folks selected to run it." Moreover, "control boards always create concerns about undermining democratic processes, since they displace those processes to some extent."

If it were a state, Puerto Rico would be ranked 37th in GDP but third in total debt. Its debt accumulation, which has ballooned since the late 1980s (see chart), has multiple long-term drivers, including sluggish economic growth, habitual budget deficits, and a buildup of obligations by quasi-government entities. The government's roughly 50 different public corporations serve a wide range of roles, from overseeing infrastructure or health care to promoting tourism; they compose more than two-thirds of Puerto Rico's total debt burden. The island's three largest public corporations — Puerto Rico Electric Power Authority (PREPA), Puerto Rico Aqueduct and Sewer Authority (PRASA), and Highways and Transportation Authority (HTA) — plus the central government are responsible for most of the increase in total public debt since 2000.

The island's territory status also has implications for its economy. For example, the island is subject to U.S. minimum wage laws, but the U.S. minimum wage is higher than the real market wage for Puerto Rico's largely unskilled labor force. In a June 2015 report, economists Anne Krueger, Ranjit Teja, and Andrew Wolfe argued that is one reason — though not the only one — that 60 percent of its population is either not working or in the "grey economy" (compared to roughly a third on the mainland). A weak labor market has depressed growth and fed migration to the U.S. mainland, since Puerto Ricans can migrate freely, with a population decline of about 1 percent annually for the last decade. Also, the Jones Act, which requires that all shipping between U.S. ports use only U.S. vessels and crew, raises the cost of trade with the mainland. Economists disagree on the extent to which these factors have contributed to the longer-run fiscal problems, thus affecting Puerto Rico's ability to service its debts, but they continue to be a source of heated debate.

Puerto Rico was able to make its scheduled debt payment in December but defaulted on part of another in January. Garcia Padilla warned that the payments it did make were made at the expense of future payments.

## The Bankruptcy Question

The island's estimated shortfall is \$28 billion over the next five years. Fiscal restraint and economic growth alone could



cut at most half, according to a September 2015 government report. Thus, most discussions have focused on methods for renegotiation: extending the maturity of debt (thereby lowering the amount per payment), reducing the amount of interest or principal, or refinancing the debt with new loans. Renegotiation can be mutually beneficial when the alternative is default or costly lawsuits.

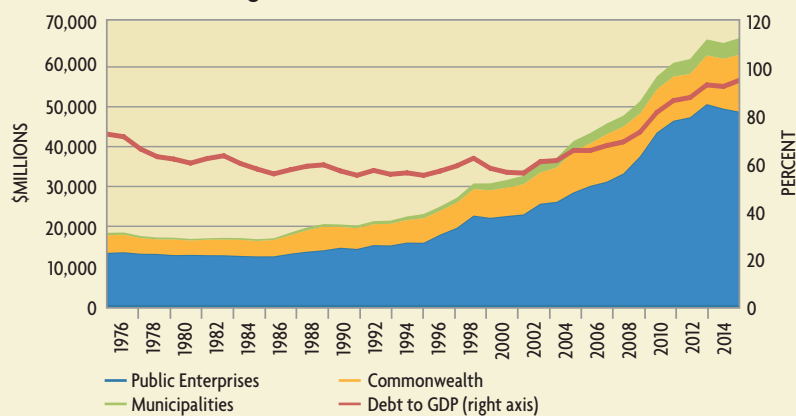
Restructuring is no easy task, however. “Getting a handle on the structure of Puerto Rico’s debt is difficult. There are some 18 different issuers, and transfers of assets further complicate the picture,” says Andrew Austin, an economist with the Congressional Research Service. The island’s public electric utility, PREPA, has gone to creditors directly to try to renegotiate its debt, amounting to about an eighth of total public sector debt. So far, it has met its payments, at times with help from its creditors. This progress provides a ray of hope that a broader framework for restructuring could also succeed, Austin argues. At the same time, he notes that different sets of creditors have different interests, and without an outside adjudicator, a debt restructuring deal may be difficult to obtain before the island government runs out of liquidity completely.

Hence, the question of municipal bankruptcy through Chapter 9 of the Bankruptcy Code has come into focus. In Chapter 9, a municipality seeks, with a state’s permission, to use the court system to renegotiate debts and determine creditor priority, maximizing the municipality’s ability to continue functioning. Since it was established by legislation in 1937, Chapter 9 has assisted well over 600 U.S. municipalities and their instrumentalities — most recently in Detroit. One of its potential advantages is that it requires only a majority of creditors to approve a deal, preventing minority interests from blocking a deal or dragging out talks.

But this route is currently unavailable to Puerto Rico: Its municipalities cannot qualify for Chapter 9 because Puerto Rico is not a U.S. state. And states, which have greater independent resources for revenue generation, are precluded from declaring bankruptcy for reasons dating back to constitutional safeguards that prevent states from diluting the power of contracts by, for example, writing off their own debts. For the most part, defaulting U.S. states have been left to fend for themselves, although Arkansas — the most recent state to default — received help from the Depression-era Reconstruction Finance Corporation in 1933. Bailouts occurred in the late 1700s, but nine states famously defaulted in the 1840s after a banking panic and the federal government’s refusal of a bailout, which economists argue created a lasting precedent forcing states to manage their own budgets more closely.

Access to Chapter 9 is a divisive issue in Congress. “Lawmakers don’t want to be seen as supporting anything that looks like a bailout,” Skeel says. “Critics of giving Puerto Rico or its municipalities a bankruptcy option have framed bankruptcy as a bailout — wrongly, in my view.” Many creditors

### Puerto Rico’s Growing Public Debt



SOURCE: Puerto Rico Planning Board. Debt figures adjusted by author to constant 2014 dollars using GDP deflator.

with seniority, including hedge funds that stepped in after ratings agencies downgraded Puerto Rican debt in 2013, worry that their priority would be overturned or that they would be forced to accept a haircut on what they are owed.

Even if Chapter 9 relief is extended to Puerto Rico, it’s not clear that would be the end of the problem. The municipal debt that would potentially be relieved under that option is less than 7 percent of the island’s total public debt. “Unless Congress amends the Bankruptcy Code to allow Puerto Rico’s central government and its public corporations, not just its municipalities, to receive assistance, Chapter 9 will not suffice,” says Maurice McTigue of George Mason University’s Mercatus Center.

### Taking The Reins

Ultimately, the United States may have to consider unorthodox measures to resolve the crisis. Control boards are one. Another, a proposal recently floated by the U.S. Treasury Department, would have the United States issue new “super-bonds” to Puerto Rico’s creditors in exchange for their existing bonds, effectively consolidating creditors under one group of obligations. Treasury would oversee a portion of the island’s tax revenue and place it in an escrow account to make sure it is used for repayment. U.S. taxpayers would not be on the hook, but Treasury argues that its supervision would make this route more attractive for creditors than accepting bonds issued by the Puerto Rican government.

In the near term, creditors and policymakers alike will be looking to a U.S. Supreme Court decision later this year that may shape future debt talks either way. The court will decide a case, *Puerto Rico v. Franklin California Tax-Free Trust*, concerning whether the island’s utilities can renegotiate their debt through Puerto Rico’s legal system using an alternative to federal bankruptcy that island lawmakers set up in 2014. If the court overturns a lower-court decision, it would provide an avenue for about \$20 billion in obligations to be restructured.

Regardless of what U.S. policymakers decide, Skeel wagers that the island will continue efforts to put its fiscal situation on a more sustainable footing. But he says the outcome if no debt restructuring occurs is simple: “Puerto Rico would continue to cut services and lose population.” **EF**

# The Techonomist in the Machine

**When tech companies need to understand marketplaces, and tens of millions of dollars are at stake, some of them are turning to a new kind of researcher**

BY DAVID A. PRICE

When Tom Blake was on the job market in 2012 as an economics Ph.D. student, he assumed he would land at a university or a government research department. But Blake, then studying at the University of California, Davis, accepted an on-site interview from San Jose, Calif.-based eBay. He remembers the moment during the visit when he decided he might be ready to leave academia behind.

“I was with one of the data scientists, and I started asking him questions about who has access to the data and how you get access,” Blake says. “He was quite befuddled. I had come from academic research, where data has to be begged for. After some probing, I realized that he had direct access. I realized that I would be totally unfettered in my ability to get to the bottom of any question.”

Blake joined eBay Research Labs that year and became part of the small, but growing, band of Ph.D. economists doing economic research in technology companies. One might call them the “techonomists.” Some are part of a research staff within a firm and spend all their time on economic research, while others work within a business unit of a firm while doing research as well. Whichever category they fall into, they’re in a relatively new type of job: Although economists have long worked in private companies in a handful of traditional roles — like finance, litigation consulting, and economic forecasting — the staff economist carrying out research in a technology firm, and sometimes publishing his or her work, is largely a 21st century development. (Additionally, non-technology firms have been hiring economists, not necessarily Ph.D.s, to mine the firms’ large data sets for economic insights.)

Many of the high-profile tech firms of Silicon Valley and elsewhere have techonomists on board; in addition to eBay, the club includes, among others, Airbnb, Amazon.com, Facebook, Google, Microsoft, Netflix, and Pandora. Some of these companies also engage academic economists on a part-time basis to work with their in-house economists. The problems that techonomists are stalking with big data range

from marketplace design to digital advertising strategy, from online search behavior to pricing.

Susan Athey of Stanford University, formerly chief economist at Microsoft on a consulting basis, says she is regularly contacted by firms and recruiters who are seeking pointers to possible candidates for such positions. “The flow seems to be increasing,” she says.

Mike Bailey, Facebook’s economics research manager, agrees. “It definitely seems like it’s growing at a fast pace.”

## The Tech Industry’s Allure

Bailey started at Facebook as a research intern in 2011 while he was a Stanford doctoral student. Like eBay’s Blake, he too was enamored of the data. “It quickly became clear that working at Facebook would have a lot of advantages over academia,” he remembers. “I would be able to continue to work on cutting-edge economics problems, but I would have access to amazing resources — a one-of-a-kind dataset.”

For some techonomists, another attraction is the chance to influence the course of a major enterprise. Justin Rao, an economist at Microsoft Research in Redmond, Wash., says, “I’ve recently had conversations like, ‘Justin, do you believe this? Because we’ll do it if you do.’ Often, we don’t have that feeling in academia; you might be falsified in academia via replication, but maybe not. Here, you get put in positions where it will be revealed if you are right or wrong, denoted in tens of millions of dollars.”

Blake concurs. “One of the unexpected perks was the actual ability to shape a marketplace,” he says. “There’s a great deal of satisfaction in it; it’s nice to see the rubber meet the road.”

He recalls the outcome of research with co-authors on the effectiveness of online search ads. “Academically, it led to publication, which is always nice” — it appeared in *Econometrica* in early 2015 — “but internally, it led to a lot of direct actions, and the way money is allocated was changed quite dramatically.”

Still another plus of working at a tech company, as some see it, is tackling a variety of questions rather than specializing. “I enjoy working on a wide array of problems,” Bailey says. “In academia, you are rewarded for building deep expertise in one area, which takes investing years of work into a few projects; that just didn’t appeal to me in the end.”

Rao explains, “As a professor, you’re going to dig into a specific topic and become an expert on that topic. If that’s the marathoner approach, I’ve been asked to become like a middle-distance runner on a lot of topics.”

And since economists are famous for believing in the power of financial incentives, it would be surprising if money didn’t have a role in techonomists’ career choices. Rao recalls being hired for his first job out of graduate school at Yahoo by Preston McAfee, a former California Institute of Technology professor who was then Yahoo’s chief economist (a role he now holds at Microsoft). “Yahoo offered me 40 percent more money than my next best offer and the ability to stay in California, and Preston McAfee was telling me it’s an excellent risk to take. I think I signed two hours after that phone call.”



To be sure, academia still exerts a strong pull in economics. “When economics Ph.D.s hit the market, their instinct and the pressure from their department typically is to take an academic appointment and ‘moonlight’ if they are interested in tech,” according to Rao.

But that bias in favor of academic jobs could diminish in coming years. “My cohort and those that have followed [moving straight from Ph.D. work to the tech industry] have done quite well, and at the same time, more established economists like Susan Athey, Preston McAfee, Hal Varian [of Google], and Steve Tadelis [formerly of eBay, now of the University of California, Berkeley] tightened the link between industry and academia,” Rao says. “So I think the perception is changing and fresh Ph.D.s are beginning to believe that it’s more of a two-way street between academia and industry, as it is in computer science.”

### The View from the Inside

Another difference between jobs in the tech industry and in academia or government, for better or worse, is the absence of private offices. For the most part, the technologist can forget about closing a door for an afternoon of quiet rumination and undistracted work. At typical companies in the Internet sector, open floor plans are the norm, partly to promote interaction among workers.

When Blake was considering eBay, the prospect of being officeless caused him some concern. But he says he now finds it beneficial. “I’m surrounded in an open space environment

The freedom to publish enables firms to attract a higher caliber of candidates.

by other economists, so it actually does facilitate collaboration. We get to bounce ideas off of each other.”

And there are escapes. “We have lots of conference rooms and lots of phone rooms so we don’t disturb people around us. And there’s always headphones. Plus, we’re not tethered to our desks — we have laptops and the ability to roam around campus, so we spend a lot of time working outside when it’s warm.” (At Microsoft’s Redmond, Wash., headquarters, economists, like software developers, have offices with glass doors, a result of founding CEO Bill Gates’ belief that offices are important to productivity.)

But an economist’s setting isn’t everything. Still more important is how they decide what problems to work on — or who decides for them. Usually, Bailey says, the company’s chief economist manages the research agenda of the group. Within this structure, the freedom given each economist to set his or her own course varies from one firm to another. “At Facebook, we give our research economists a lot of leeway in deciding what to work on and incepting their own projects, but we will often find — or people within the firm will approach us about — strategically important areas and we’ll make sure they are staffed within the team.”

At Microsoft, Rao says, “it’s self-directed with guidance.”

## What Are They Working On Now?

Two economists at leading technology companies offered a peek behind the curtains at their own current research agendas. The projects they’re describing here are among the many that are active at their companies:

### Tom Blake, economist, eBay

We’re currently working on a wide set of questions relating to online bargaining. eBay has a feature on its site called “Best Offer” that allows buyers and sellers to negotiate in bilateral one-on-one bargaining over particular items that are being sold. That’s a mechanism eBay can do a lot to adjust. There are a lot of ways in which bargaining can fail, and there’s a lot eBay can do to reduce asymmetric information frictions and other frictions in the market to increase transactions.

That’s in eBay’s best interest — eBay wants more transaction volume — but it’s also a really interesting way to add value to the academic literature. There isn’t a lot of detailed data out there on bilateral bargaining, on offer-level behavior, and on the actual interactions of buyers and sellers in how they position themselves to extract better deals for themselves. Running experiments by changing features of the platform generates experimental variations in bargaining settings. That level of data can inform a lot of academic questions.

### Justin Rao, senior researcher, Microsoft Research

Right now, I’m focusing almost all of my energy on cloud computing. It changes the way everything works. We don’t understand a lot of the economics of it. It’s a very competitive market, with Amazon and Google also being big players.

The model of boxed software — pay \$2,000 for a license to install an application on 10 computers — just won’t be a thing in five years. A lot of what is on the cloud is basically doing the same: Bring your software license and we’ll run your software. We don’t think that is going to prevail.

I’m working mainly on cloud dynamic pricing for infrastructure and pricing models for the software. What are the mechanisms that we need to have ready for the future of computing and the future of software use — how we price it, how we sell it, the dynamics of it? I think there’s going to be a lot of mechanism design work there.

It’s in its early days, and it’s a huge space. We’re trying to identify the core economic issues, project where the market’s going, and be sitting there ready with mechanisms to sell things that are efficient, clear the market, and help us compete.

Trying to become an expert and understand the engineering side is really challenging. It’s required about a year’s investment to get up to speed. It’s just so much more complicated than anything I’ve worked on. — DAVID A. PRICE

His counsel to a recent Ph.D. hire: “Look, for the most part, follow our lead — we’ve been here a little longer and we have better-calibrated beliefs. But you should take 35 percent of your time to do, not only whatever you want, but risky stuff. We want you taking swings for the fences.”

Some techonomists have professionals in other fields taking those swings with them. Facebook economists are part of a larger research team that also includes researchers in computer science, statistics, psychology, and other disciplines. “We collaborate closely with people from across the entire team,” says Bailey, “and end up taking very interdisciplinary approaches to solving problems.” Microsoft economists may be paired on a project with a software developer who has an interest in economics, a data scientist (commonly a Ph.D. in math or statistics) who works on econometrics and other data analysis, or both.

### Going Public

At some firms, techonomists share their work with their counterparts outside their companies’ walls. The simplest way that this happens is through direct exchanges with another firm.

“We don’t view what we’re doing as a zero-sum game,” Rao says. “We’ll meet with Amazon economists and talk about, let’s say, how we can use machine learning to improve recruiting from both a quality and a diversity point of view. On the one hand, yes, Amazon’s a competitor, but we think that if we both become more productive, we both benefit, and it’s fine.”

Beyond that, many of the firms allow techonomists to publish their work — and not only allow it, but encourage it. (Given the nature of their work, it may appear in either economics journals or computer science journals.)

But why would a firm unilaterally share hard-won insights and risk losing a competitive advantage? One reason is that the techonomists see value in having their work vetted by their peers in the academic community. When confidentiality is at a premium, they may pursue that goal by discussing their work with an academic who is affiliated with the company; these academics often have spent time as scholars in residence at the firms and have confidentiality agreements in place. In many cases, however, the desire to obtain additional insights from the academic community in general through broad disclosure of the research outweighs immediate competitive concerns.

Probably the most important reason the firms allow publication, though, is that when they’re hiring, the freedom to publish enables them to attract a higher caliber of economist candidates. “It does help with recruiting,” says Blake. “And it’s important to folks like myself with academic backgrounds because we want to share these really awesome insights that we get out of looking at our data.”

As these firms see it, the strongest economics Ph.D.s want to remain part of the discipline’s scholarly conversation. That’s especially true of Ph.D.s who think they may want a faculty job someday. “If you’re recruiting people in the job market and you offer the likelihood of publishing

good papers, you’re offering someone a lot of career option value,” says Rao. (Rao credits Athey, who founded the economics research group at Microsoft in 2007, with instilling that approach within the group.)

Ideas of openness that are espoused by Internet companies can help techonomists make the case for publishing when it raises concerns. “We operate a transparent marketplace,” Blake says of eBay. “The notion of ‘open and transparent’ really resonates with eBay’s values, and when we appeal to that to get papers published, that has always gone over very well.”

### The Techonomist’s Path

A decade ago, techonomists didn’t have a distinct career path; for the most part, they were senior-level academics whose next move would likely be returning full time to academia. That is changing as more firms start economics groups and as those with groups expand them.

“Smaller companies will contact us and say they’re looking for a chief economist and they want to grow a group,” says Rao. “Everyone’s seeing that, and that makes it easier for us to recruit. We can recruit people who want to be chief economist somewhere one day, and we say, ‘Oh, yeah, you can do that. Be with us for five years.’”

Some believe the growth of economics in tech companies is benefiting West Coast economics departments. “It’s been great for our students,” says Stanford’s Athey. “For example, we had students working with Airbnb who wrote novel research papers. Sometimes what happens is a grad student or young faculty member forms a relationship and expands it into a long-term business role that is very symbiotic with their research.”

Bailey observes, “I have spoken to a few students and faculty who indicated that one attractive feature of Stanford and Berkeley was proximity to technology firms.” Facebook invites local faculty to give talks there and recruits their students, he notes.

And what are the companies looking for when they do? To be sure, the firms may come to the recruiting process with some cut-and-dried criteria in mind — for instance, a background in empirical work in general and, perhaps, in a sub-field like industrial organization, in particular. And academic departments and tech companies alike value collegiality.

But the unique setting of a tech firm may lead them to other intangible criteria, as well. “A fundamental part of our job is speaking many languages,” says Blake. “We have to be able to communicate with a really diverse set of people — businesspeople with their MBA vernacular, lawyers, finance people, a lot of engineers — to get them to understand what our hypothesis is or what we believe is happening in the market.”

“Researchers who want to hole up in their offices and just work on their own thing and push the papers out would be a bad fit,” he adds. “But for folks who do want to engage and who enjoy having coffee with engineers and explaining to them why they think they found the coolest new feature, that’s somebody who does very well here.” **EF**

# Strategic Default and Mortgage Fraud

BY JESSIE ROMERO

**“Can’t Pay or Won’t Pay? Unemployment, Negative Equity, and Strategic Default.”** Kristopher Gerardi, Kyle F. Herkenhoff, Lee E. Ohanian, and Paul S. Willen, *Federal Reserve Bank of Boston Working Paper No. 15-13*, Sept. 21, 2015.

Since the housing bubble burst, a large body of research has studied homeowners’ decisions to default on their mortgages. Contrary to theory, most empirical work has found that unemployment is a weak predictor of default. Using new data from the 2009 and 2011 waves of the University of Michigan’s Panel Study of Income Dynamics, however, researchers at the Boston Fed find that households hit by job loss are significantly more likely to default. In the propensity to default, an unemployed household head is equivalent to a 56 percent increase in the loan-to-value (LTV) ratio, and an unemployed spouse is equivalent to a 43 percent increase.

The researchers then compare their data to the “double trigger” model, which holds that negative equity combined with a household shock, such as job loss or divorce, leads to default. They divide the households in their data into those that “can pay” and those that “can’t pay” their mortgages. They find that about 81 percent of households the model predicts would default — those with negative equity that can’t pay — did continue paying their mortgage, perhaps by liquidating assets such as retirement funds. The researchers also find few instances of “strategic default”: Only 1 percent of “can pay” borrowers with negative equity in the sample opted to default.

One implication of their findings is that lenders might be less willing to offer distressed homeowners payment or principal reductions, since lenders’ willingness to offer loan modifications increases with the probability of default.

**“Owner Occupancy Fraud and Mortgage Performance.”** Ronel Elul and Sebastian Tilson, *Federal Reserve Bank of Philadelphia Working Paper No. 15-45*, December 2015.

Recent work by Ronel Elul and Sebastian Tilson of the Philadelphia Fed also examines the mortgage market. They study occupancy fraud, which occurs when borrowers claim they intend to live in a home, not rent it out or resell it quickly. (Banks typically require higher down payments and charge higher interest rates to declared investors.)

Previous research on occupancy fraud in the mortgage market has focused on privately securitized loans and relied on zip-code changes to identify fraudulent investors. Elul and Tilson use a dataset that matches mortgage data from McDash Analytics with Equifax credit bureau data for mortgages originated between 2005 and 2007. This allows them to study loans

guaranteed by Fannie Mae, Freddie Mac, and the Federal Housing Administration (FHA) in addition to privately securitized loans, and to identify fraudulent investors who live in the same zip code where they purchased their investment property. They flag as fraudulent those borrowers who do not change their address around the time the mortgage was initiated and who have more than one first-lien mortgage.

Overall, 6.1 percent of the loans in the sample were taken out by fraudulent investors. The share was much higher — 39.2 percent — in the “bubble states” of Arizona, California, Florida, and Nevada. Fraudulent investors were nearly twice as likely to default as honest owner-occupants or declared investors. Those defaults were likely to be strategic: Elul and Tilson find that among all seriously delinquent borrowers, fraudulent investors had much more liquidity as measured by bank card utilization than owner occupants and were more likely to be current on their bank card payments. The authors conclude that fraudulent pledges to live in mortgaged homes played an important role in the housing boom and bust.

**“Underemployment in the Early Careers of College Graduates Following the Great Recession.”** Jason R. Abel and Richard Dietz, *Federal Reserve Bank of New York Staff Report No. 749*, December 2015.

The “college-educated barista” was a popular stereotype after the Great Recession. In a recent paper, however, economists at the New York Fed show that while many college graduates were underemployed — that is, working in jobs that do not require a college degree — most were not working in low-skill service jobs.

Underemployment is not a new phenomenon. Since 1990, about one-third of all college graduates have been underemployed. Following the Great Recession, the underemployment rate for recent college graduates rose to more than 46 percent, from a low of about 37 percent in the early 2000s. Abel and Dietz find that between 2009 and 2013, about 40 percent of underemployed workers were in relatively high-paying jobs, making more than \$50,000 per year. Still, nearly one-fifth of underemployed recent college graduates (around 9 percent of all recent graduates) were employed in low-skill service jobs, making around minimum wage.

Some college graduates are more prone to underemployment than others. Graduates who majored in a field that provides occupation-specific training, such as nursing, or emphasizes quantitative skills, such as engineering or accounting, are much less likely to be underemployed. For many workers, underemployment is a temporary phase, as they transition to college-level jobs by their late 20s. **EF**

## Emi Nakamura

**Editor's Note:** *This is an abbreviated version of EF's conversation with Emi Nakamura. For the full interview go to our website: [www.richmondfed.org/publications](http://www.richmondfed.org/publications)*

A key question in macroeconomics is the extent to which demand shocks — ranging from changes in monetary and fiscal policies to private-sector events such as consumer deleveraging — affect “real” variables in the economy such as output and employment.

Empirical research strongly suggests that these phenomena can, in fact, have a large effect on the real economy. While perhaps not surprising to most economists, it does require some explaining. In simple models in which markets work perfectly, prices and wages respond quickly to shocks. In such a world, output and employment would not respond much to demand shocks — and monetary policy in particular would have no effect on real variables, an outcome known as “monetary neutrality.”

A favored explanation for why this doesn't occur in the real world is the idea that prices are “sticky”: They do not adjust quickly or completely to shocks. If prices are sticky, not only can resources fail to flow to where they are most highly valued, but economy-wide problems like recessions and unemployment can result.

Columbia University economist Emi Nakamura has spent much of her research career measuring price stickiness. She, along with frequent co-author and spouse Jón Steinsson, was one of the first researchers to analyze the micro data underlying the U.S. consumer price index (CPI), a dataset that provides the most broad-based measures of price rigidity for the U.S. economy. They showed that previous measures from these data, which suggested a great deal of price flexibility, did not account for important nuances of retail prices, such as temporary sales.

Such findings have important implications for macroeconomic policy, another focus of Nakamura's research. Her work measuring the effectiveness of fiscal and monetary policies has exploited unique datasets to argue, for example, that state-level variation in military spending can be used as a source of “natural experiments” to estimate the size of the aggregate fiscal multiplier, and that official Chinese statistics on inflation are not quite what they seem.

Nakamura is currently a visiting professor at the Massachusetts Institute of Technology. Renee Haltom interviewed her in her office in Cambridge in October 2015.



**EF:** You and Jón Steinsson were among the first researchers to exploit large micro datasets — that is, pricing at the level of individual goods and services — to measure price stickiness. What new information does the micro data provide?

**Nakamura:** Before the work on micro data, most of the monetary economics papers used an assumption like, “prices change once a year.” That was based on very limited evidence from individual industries. For example, Anil Kashyap had a study of catalogue prices and Alan Blinder had a survey of firms that were very influential. But there was always the worry that we didn't have enough information from the microeconomic side to justify the assumptions we were making in macro models.

In 2004, Mark Bils and Peter Klenow came out with a landmark study that used data that were much more broad-based than what people had used before. They were looking at the unpublished data underlying the consumer price index, and they showed that there were lots of price changes in the data, many more than monetary economists had traditionally assumed in their models; they found that prices changed roughly every four months on average. And so economists had to ask themselves whether these differences were important for macroeconomics. Were these the types of price changes that monetary economists had in mind?

That fit in well with my interest in microeconomic approaches to understanding price setting. In my early papers with Jón, we showed that a big fraction of the price changes in the Bureau of Labor Statistics data are temporary sales, and that these sales look totally different from the price changes that people were thinking about in stylized macro models: They are much less persistent, with prices often returning back to the original price after a short period.

And in more recent work with another macroeconomist, Ben Malin, and two marketing professors, Eric Anderson and Duncan Simester, we show that there are a lot of institutional frictions that imply sales aren't optimally timed in response to things like recessions. In many cases, for example, a retailer's whole plan for sales is decided in advance at the beginning of the year. Finally, there's a lot of heterogeneity in the economy, and the stickier sectors can hold back price responses in the more flexible ones.

All this means that even if we were to see a huge number of price changes in the micro data, the aggregate inflation rate may still be pretty sticky. And if one abstracts from the huge number of sales in retail price data, then prices look a lot less flexible than they first appear.

**EF: What is the most important takeaway for macroeconomists and policymakers from the evidence on price stickiness?**

**Nakamura:** To me, the key consequence of sticky prices is that demand shocks matter. Demand shocks can come from many places: house prices, fiscal stimulus, animal spirits, and so on. But the key prediction is that prices don't adjust rapidly enough to eliminate the impact of demand shocks.

For example, Atif Mian and Amir Sufi have emphasized that the decline in housing wealth was a very important part of the Great Recession. And if you think about a situation where interest rates have basically been stuck at zero, meaning nominal rates are fixed, what has to happen in efficient models of the economy, like a real business cycle model, is that the real interest rate has to fall to maintain full employment. But that requires this extremely flexible adjustment of prices: Prices would need to jump down and then slowly rise. This would lower real rates by creating inflation. But with sticky prices, prices do not "jump." Instead, prices slowly fall — leading to deflation and an *increase* in real rates, exactly the opposite of what is supposed to happen.

**EF: Yet, after a decade of research on micro price datasets, there is still no consensus on whether the price stickiness we observe at the microeconomic level implies the kind of substantial monetary non-neutralities suggested by macroeconomic evidence. Can further micro research on price rigidities still help us better establish the nature and extent of that link?**

**Nakamura:** I think we have a pretty good sense by now of how often prices change. But there's a lot of evidence from the aggregate data suggesting that prices don't respond fully even when they do change. If the pricing decisions of one firm depend on what other firms do, then even when one

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It's been a time when even some people within the profession who had a very hardcore skepticism of price and wage adjustment frictions have started to wonder whether they might be important after all. I didn't come at it with such a strong perspective myself. I was always more of an empiricist.

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firm changes its prices, it might adjust only partway. And then the next firm adjusts only partway, and so on. This goes under the heading of real rigidities, and there are many sources of them. One example is intermediate inputs; if you buy a lot of stuff from other firms, then if they haven't yet raised their prices to you, then you don't want to raise

your prices, and so on. Another source is basic competition: If your competitors haven't raised their prices, you might not want to raise your prices. The same thing occurs if some price changes are on autopilot, or if the people changing prices aren't fully responding to macro news — this is the core of the sticky information literature. These knock-on effects mean that inflation can still be "sticky" long after all the prices in the economy have adjusted.

Real rigidities are where it's much more complicated to do an empirical study. You have to ask not only whether the price changed, but whether it responded fully; so you need to have not only the price data, but also to see the shock to form an idea of what the efficient response would be. For that, the difficulty is that you don't often have good cost data. One part of my Ph.D. thesis was on the coffee market. In that case, you see commodity costs of coffee, so you can see both how frequently say, Folgers, changes its prices and how much it responds to commodity costs when it changes its price. The other type of evidence that speaks to this question comes from exchange rate movements. When you have changes in the exchange rate, you have a situation where there's an observable shock to firms' marginal costs, and you can use that to figure out how much prices respond conditional on having adjusted at all. But fundamentally, this is a much more challenging empirical problem.

**EF: Much of the "reconsideration of macroeconomics" in the wake of the Great Recession has taken the view that financial markets and financial frictions should be an integral part of any applied macroeconomic model. Does this view necessarily downgrade the importance of price stickiness as an explanation for economic fluctuations and the importance of monetary policy? To what extent do you think price and wage rigidities played a role in the severity of the Great Recession?**

**Nakamura:** I think the Great Recession has actually increased the emphasis in macroeconomics on traditional Keynesian frictions. The shock that led to the Great Recession was probably some combination of financial shocks and housing shocks — but what happened afterward looked very Keynesian. Output and employment fell, as did inflation. And for demand shocks to have a big impact, there have to be some frictions in the adjustment of prices. The models that have been successful in explaining the Great Recession

have typically been the ones that have combined nominal frictions with a financial shock of some kind to households or firms.

One can also see the effects of traditional Keynesian factors in other countries. Jón is from Iceland, which experienced a massive exchange rate devaluation during its crisis. Other countries that were part of the euro, such as Spain, did not. I think this probably mattered a lot; if prices and wages were flexible, the distinction between a fixed and flexible exchange rate wouldn't matter. Another example is Detroit. If Detroit had had a flexible exchange rate with the rest of the United States, a devaluation would have been possible to lower the relative wages of autoworkers, which might have been very helpful. Much of what happened during the Great Recession felt like a textbook example of the consequences of Keynesian frictions.

**EF: Is the idea that you have to combine financial frictions with price rigidities to get a prolonged macroeconomic effect starting to become the dominant way of thinking about modeling financial frictions?**

**Nakamura:** Yes, I definitely think so. I think it's something that probably has become more salient in the recent period. In response to the large shocks that occurred in the financial crisis, in an efficient model of the world, there would've been much bigger price and wage adjustments and we would have avoided the big and protracted increase in unemployment. It's been a time when even some people within the profession who had a very hardcore skepticism of price and wage adjustment frictions have started to wonder whether they might be important after all.

I didn't come at it with such a strong perspective myself. I was always more of an empiricist. Clearly it's a topic on which macroeconomists in general have very strong views, but I think the recession has caused a lot of people to update their priors a little bit.

**EF: Generally speaking, your research has focused on trying to empirically understand the effects of monetary policy and fiscal policy. Can you describe why that's such a hard question and some of the approaches economists have taken?**

**Nakamura:** Sometimes it feels a little scary that we don't know the answers to these basic questions. I think a major

## Emi Nakamura

### ► Present Positions

Associate Professor of Business and Economics at Columbia University and Visiting Professor at the Massachusetts Institute of Technology

### ► Education

Ph.D. (2007), Harvard University  
A.M. (2004), Harvard University  
A.B. (2001), Princeton University

### ► Selected Publications

"Are Chinese Growth and Inflation Too Smooth? Evidence from Engel Curves," *American Economic Journal: Macroeconomics*, forthcoming (with Jón Steinsson and Miao Liu); "Fiscal Stimulus in a Monetary Union: Evidence from U.S. Regions," *American Economic Review*, 2014 (with Jón Steinsson); "Price Setting in Forward-Looking Customer Markets," *Journal of Monetary Economics*, 2011 (with Jón Steinsson); "Monetary Non-Neutrality in a Multi-Sector Menu Cost Model," *Quarterly Journal of Economics*, 2010 (with Jón Steinsson); "Five Facts about Prices: A Reevaluation of Menu Cost Models" *Quarterly Journal of Economics*, 2008 (with Jón Steinsson)

reason there's still so much debate about them is that we don't have many experiments in macroeconomics. Fiscal policy and monetary policy don't happen randomly. In principle, you can run a regression of output on government spending to try to figure out the magnitude of the multiplier, the increase in output that would result from an extra dollar of government spending. But you might conclude that the government spending caused the recession even if the causation ran the opposite direction. The reason is that the government typically embarks on stimulus spending when something else is having a negative effect on growth. What you would measure using a simple-minded approach would be the combined effect of the stimulus and the other factors that are causing the recession. That's the basic endogeneity problem, and a similar issue arises with measuring the effects of monetary policy.

In economics, we have both structural approaches, where we build models using plausible assumptions from microeconomic models, and

nonstructural approaches that use various types of natural experiments to try to learn about the effects of policy. My work on price rigidity is mostly an input into the structural approach: You walk into a store, you see that a lot of the prices just aren't changing all the time, and as a consequence, price rigidity seems like a reasonable way to build a structural model of why we see inflation as a whole not responding as it might in frictionless models.

The second approach is to use non-structural methods. In this case, one tries to use natural experiments. In my paper with Jón on fiscal stimulus, we look at aggregate variation in military spending to see how it affects states differently. The basic idea is that there are these long-run fluctuations in aggregate military spending — for example, the Carter-Reagan military buildup. But they affect states very differently; every time the United States goes into a big military buildup, it has a much bigger effect on California than it does on Illinois because California has a lot more military activity.

**EF: That study found unusually high multipliers. Is that representative of what might happen at the aggregate level, for example, following a federal fiscal stimulus effort intended to bring the economy out of recession?**

**Nakamura:** We find a multiplier of about 1.5. But that's a relative multiplier; in other words, if California receives \$1 more in military spending than Illinois due to an aggregate

military buildup, state-level output in California rises by \$1.50 more in California versus Illinois.

You want to think about these estimates as what the multiplier would be if monetary policy were relatively unresponsive. The intuition is that the Fed can't raise interest rates in California relative to Illinois. So our paper doesn't say that multipliers are always high; it says that multipliers can be high when monetary policy is constrained, like at the zero bound.

It's a good estimate for thinking about which kinds of models fit the facts. In models with price rigidities, it's possible under certain circumstances like the zero lower bound to have a big government spending multiplier. On the other hand, in models that don't have these frictions, multipliers are always close to zero.

**EF: Another approach would look directly at monetary shocks, meaning changes to the Federal Open Market Committee's monetary policy. How did you try to overcome the question of causation there?**

**Nakamura:** Here we try to use the fact that if there's something going on in the economy, say a big recession, that will already have been priced in to financial markets even before the FOMC meeting. So the change you see in interest rate futures in the 30 minutes after an FOMC announcement is a true monetary shock, not a response to macroeconomic events.

The intuition is that in a model where monetary policy has no impact, like a real business cycle model, then monetary policy affects nominal interest rates, but all of the impact comes through inflation. There's no impact on real interest rates. But what we find in this paper is that the monetary policy shocks actually have a pretty large and pretty long-lasting impact on not only the nominal interest rate, but also the real interest rate.

So we find quite a bit of evidence for monetary non-neutrality. And to explain that kind of evidence, you need a framework that has price rigidity.

**EF: Do you think there really are such things as menu costs — meaning a direct cost to changing prices — given innovations such as bar codes? Or are “pure” fixed costs of price changes in models always really a stand-in for something else?**

**Nakamura:** My sense is that literal menu costs are not very important. If managers wanted to have supermarkets where all the prices were digital, for example, it would be possible. Coca-Cola at one point tried to have a vending machine that had prices rise in hot weather and people got very irritated. So I think the right theory has to somehow take this into consideration. It's interesting to think about why Uber has been able to have surge pricing and whether other sectors of the economy might be able to do that too. But when we look at long-term data on price rigidity, one of the things we just don't see is prices getting more flexible over time. It actually looks like prices are getting stickier, because the inflation rate is falling.

So I think the Calvo and menu cost models are simple empirical models for complicated processes that we don't fully understand. The question is, why does price rigidity arise? In surveys of managers that ask why they don't change their prices, they almost always say something about not wanting to upset their customers, this idea of implicit or explicit contracts with them.

I have another paper with Jón on customer markets that tries to provide a model of this. Say you go to Starbucks every day, then in a sense you become “addicted.” So Starbucks has an opportunity to price gouge. But if you know that Starbucks is going to try to exploit you once you become addicted, then you may try to avoid going there in the first place. So it can be in the interest of both the firm and the customer for the firm to “commit to a sticky price.” This theory can help explain some of the patterns we see in the data — the fact that you see regular prices and downward deviations (sales) but basically never upward deviations (reverse sales).

A similar theory applies to wages. You hire a cleaning person, and in principle, you could set their wages as being indexed to the CPI. But it's not a simple thing for everybody in the world to pay attention to the CPI, so offering your cleaning person a wage indexed to the CPI probably wouldn't be practical. A fixed wage salary is just a lot easier to understand. So maybe the right way of thinking about price rigidity, at a deep level, is some combination of customer markets and information frictions. But I think this is an area where measurement is ahead of theory, and the ideal model has yet to be written.

**EF: Many researchers have noted that China's official statistics on inflation suggest lower inflation rates than might have been expected given the country's very rapid growth. You found something very surprising in a paper with Jón and Miao Liu. Can you describe that work?**

**Nakamura:** There's a lot of skepticism about Chinese official statistics, and we wanted to think about alternative ways of estimating Chinese inflation. We use Chinese consumption data to estimate Engel curves, which give you a relationship between people's income and the fraction of their income that they spend on luxuries versus necessities. All else equal, if Chinese people are spending a lot more of their total food budget on luxuries such as fish, that could tell us that their consumption is growing very rapidly. Holding nominal quantities fixed, higher growth is associated with lower inflation, so we can invert estimates of consumption growth to get the bias in the inflation rate.

This approach has been applied to many countries, including the United States, and the usual finding is that the inflation estimate you get is lower than official statistics. This is usually attributed to the idea that official statistics don't accurately account for the role of new goods, resulting in lower estimates of inflation.

But for China we found an interesting pattern. We did find lower estimates of inflation for the late 1990s. But

for the last five or 10 years, we find the opposite: Official inflation was understating true inflation, and official estimates of consumption growth were overstating consumption growth. Our estimates suggest that the official statistics are a smoothed version of reality.

There are a couple of reasons why this could be. One possibility is, of course, tampering. Whenever we present this work to an audience of Chinese economists, they are far more skeptical of the Chinese data than we are. But a second possible interpretation is that it's just very difficult to measure inflation in a country like China where things are changing so quickly.

One possible explanation actually comes from another of our papers on a phenomenon called "product replacement bias." This arises from the fact that when the BLS constructs official inflation statistics, the approach is to find a product, look at its price, and come back the next month and look at the same product. But what if a lot of the price changes happen at the time when new goods are introduced? Then inflation can look too smooth. This may be part of what is going on in China.

**EF: Most economists just consume statistics, but you've really focused on these novel measurement methods. Why has measurement been the driving focus of your research?**

**Nakamura:** I think it goes back a lot to my parents, both empirical economists. I always thought I wanted to work with data in some form, so that gave me somewhat of a unique perspective on macro, where a big part of the field is theoretical. Beyond that, a friend of the family growing up was Erwin Diewert, who is a towering giant in the field of measurement. Because of that connection, and the fact that I grew up in Vancouver and he's at the University of British Columbia, I was able to take classes on national accounts measurement when I was in high school and as an undergraduate. I was lucky to be exposed to those ideas because they are not taught much in graduate programs in economics anymore. Even though as macroeconomists we use these statistics, we don't always know very much about how they're constructed.

**EF: Do you have additional work planned in the field of measurement?**

**Nakamura:** One of the things I've been doing since grad school is working on recovering data underlying the CPI from the late 1970s and early 1980s. This is an exciting period for analyzing price dynamics since it incorporates the U.S. Great Inflation and the Volcker disinflation — the only period in recent U.S. history when inflation was really high. In the course of our other research, Jón and I figured out that there were ancient microfilm cartridges at the BLS from the 1970s in old filing cabinets. The last microfilm readers that could read them had literally broken, and they couldn't

be read by any modern readers. Moreover, they couldn't be taken out of the BLS because they're confidential.

So we decided to try to recover these microfilm cartridges. We had an excellent grad student, who became our co-author, who learned a lot about microfilm cartridge readers and found some that could be retrofitted to read these old cartridges. After we scanned in the data, we had to use an optical character recognition program to convert it into machine-readable form. That was very tricky. The first quote we got to do this was over a million dollars, but our grad student ultimately found a company that would do it for a 100th of the cost. This has been quite an odyssey of a project, and there were many times when I thought we might never pull it off.

We are now finally getting to analyze the data. We are trying to get a sense of the costs of inflation and also how price flexibility has changed over time. Most central banks think about the costs of inflation in terms of price dispersion. The idea is that inflation causes relative prices to get messed up, so they don't give the right price signals in the economy. But we actually have very little empirical evidence for this mechanism.

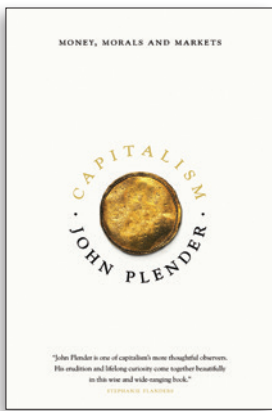
What we find in our data is that despite the high inflation of the late 1970s and early 1980s, there's really very little evidence that price dispersion increased. This feeds into the recent debate about the optimal inflation rate. People such as Olivier Blanchard have argued that central banks should target higher inflation rates so as to avoid hitting the zero lower bound on nominal interest rates. One argument for low inflation rates is that in the canonical models used by central banks, the costs of inflation associated with price dispersion are huge. But our analysis suggests that the models don't do very well empirically along this dimension. Of course, price dispersion probably isn't the only cost of inflation, even though it plays a central role in monetary models. But our results do push in the direction of suggesting we should have a higher inflation target.

**EF: You've mentioned several economists who have influenced you, including your parents. Who else would you list as your primary influences?**

**Nakamura:** My professors at Harvard in grad school had a big influence on me. One great thing about Harvard was the focus on empirical methods. Two people with very different perspectives on this who influenced me were Robert Barro and Ariel Pakes. I always saw it as an achievement that I managed to have them both on my thesis committee because they come from such different intellectual backgrounds — so I think they rarely found themselves in the same seminar, let alone on a thesis committee. Both were very interested in empirical methods but in very different ways: Robert has collected many large datasets over his career, and Ariel has mainly been interested in estimating structural models of industry structure and pricing. Seeing these different perspectives was an amazing thing that I got out of my experience in grad school. **EF**



# Only Two Cheers for Capitalism?



## CAPITALISM: MONEY, MORALS AND MARKETS

BY JOHN PLENDER

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REVIEWED BY AARON STEELMAN

The efficiency of capitalism was once widely questioned. In addition to charges that capitalism was ethically dubious because it seemed to make virtues out of greed and indifference to others, it also seemed inherently prone to booms and busts in a way that planned economies were not. But as the horrors perpetrated in the Soviet Union and elsewhere became known, true believers in the collectivist dream and many of their fellow travelers were forced to rethink their positions. Was systematic and frequently brutal suppression of dissent endemic to such rigidly controlled systems? And could it also be true that instead of liberating workers, those systems kept them impoverished? A consensus developed that capitalism “delivered the goods.” Yet many people remain troubled by capitalism’s ethical underpinnings and believe that the worst of its excesses must be tempered by a good deal of state intervention to keep people and businesses from running amok.

In *Capitalism: Money, Morals and Markets*, John Plender, a columnist for the *Financial Times* who once worked in London’s financial district, seeks to explain why capitalism, despite its many successes, continues to command “such uneasy support.” He employs a wide range of sources to examine “many of the great debates about money, business, and markets not just through the eyes of economists and business people, but through the views of philosophers, politicians, novelists, poets, divines, artists, and sundry others.”

Sometimes this approach works. The people he quotes, almost always at great length, usually are on point and yield novel historical insights. At other times, the approach falters. The sourcing can seem gratuitous and distract from the narrative. More problematic than the extensive quotations he uses to put into context his own arguments are some of the arguments themselves. Two in particular stand out. First, he characterizes capitalism as something it isn’t. Second, his criticism of the economics profession is too strong.

People differ on the definition of capitalism. For some, it’s a system of exchange unfettered by government intervention. For most, though, capitalism is defined less narrowly. The market is the principal instrument through which goods are allocated, but it’s not the only one. There is room for government action to alleviate poverty and to provide education, among many other services — what believers in *laissez-faire* might call a “mixed economy.” Plender certainly

agrees that ample state provision of services is consistent with capitalism. Indeed, he thinks it’s essential in order to fill in where markets fail and to keep the system sustainable.

But the overwhelming sense one gets throughout the book is that Plender believes that a dominant — and perhaps *the* dominant — characteristic of modern capitalism is an oversized banking system dominated by a few very large institutions that have unfairly benefited from government support and whose executives are overcompensated relative to their performance. It’s hard to argue that policymakers have not made mistakes in the way they have treated the banking industry. But insofar as this is true, Plender’s complaint is with crony capitalism, not market capitalism. That the two have become so widely conflated is a serious problem for advocates of the latter.

As for the economics profession, Plender writes that “much of the instability that currently afflicts the world economy is a direct reflection of an aberrant turn in the direction taken by academic economics over the past sixty years or so.” Further, economists’ “modelling activity is rooted in a form of deductive reasoning reminiscent of the medieval schoolmen. The underlying assumptions belong to the world of fantasy.” On the first charge, he argues that a belief in market fundamentalism among economists, many of whom have made their way into policymaking in either an official or advisory capacity, laid the groundwork for the financial crisis of 2007-2008 and what he predicts will be “a further and more damaging crisis in due course.” But it’s hard to see how a doctrinaire faith in markets is to blame, as the economy has become, on balance, more regulated, not less regulated, over the past 60 years. And in the case of the financial sector, most proponents of the efficient markets hypothesis, which Plender derides, would like to see institutions bear the true costs of their mistakes, imposing discipline on them where not enough currently exists.

As for the second charge, economists probably would benefit from more fully appreciating insights from related disciplines, but to say that their work is fantastical goes too far. There is good reason why assumptions are often oversimplified — and a lot of useful work has come from models with admittedly unrealistic assumptions.

This review has been largely critical. Is it because Plender has written a bad book? No. It’s because he could have written a better one. He is a person of vast learning and talent. Would that most of the book resembled this graceful and discerning passage from the closing chapter: “[I]t is the efforts of business people working within a market system that have lifted millions from poverty all across the world over the past two and a half centuries. It would take far worse than anything capitalism has inflicted on the world so far to outweigh that enormous benefit on any true set of scales.” EF

## Post-Recession Labor Market Trends in the Fifth District

BY R. ANDREW BAUER

Dislocations in the labor market during the Great Recession were severe and the recovery was slow. It took slightly more than four years for the number of jobs to return to pre-recession levels in the Fifth District, and the unemployment rate remained higher more than six years after the recession ended. The effect varied across regions and industry sectors, however. The least-affected industry sectors enjoyed rapid turnarounds once the recession ended; for example, the education and health sector never experienced job loss and has grown at a healthy pace since the end of the recession. In contrast, other sectors, those most heavily hit by the recession, experienced very shallow recoveries with slow job growth and have yet to fully recover jobs lost during the recession.

Underlying these trends are changes in the skill sets and experience sought by firms. Economists have noted that as technology has become more widely diffused through the economy, businesses have been seeking workers with different skill sets than in the past. Technology has created new jobs while making others obsolete or less abundant. In particular, economists have found that employment growth has been stronger for higher-skilled jobs and for lower-skilled jobs while there has been less demand for middle-skilled jobs. Looking at occupation data from the Bureau of Labor Statistics (BLS), it appears that this trend has been at work in recent years in the Fifth District as higher-skilled and lower-skilled occupations have experienced greater employment growth than middle-skilled occupations.

### Industry Sector Trends

The Great Recession had varying effects on different sectors of the Fifth District economy. The two sectors most negatively impacted during the downturn were the construction and manufacturing sectors. The collapse of the housing market resulted in a sharp decrease in employment in the construction sector as well as a number of other sectors that feed into the housing sector: retail and wholesale trade, transportation, finance, and manufacturing. The manufacturing sector was heavily affected by the broad decline in domestic and foreign demand for U.S.-produced goods, both consumer and industrial. The total declines in Fifth District employment in construction and manufacturing were 24 percent and 16 percent, respectively, from January 2008 to January 2010, far greater than the 5.6 percent decline in employment across all sectors. (Although the recession technically began in December 2007 and ended in June 2009, this article uses January 2008 and January 2010 to allow for full-year comparisons and minimize seasonality issues.)

Notably, not only were these two sectors most greatly affected by the recession, they were the slowest to recover

(excluding the information sector, mainly print and telecommunications, where the continued decline in employment represents a secular decline due to structural changes rather than cyclical factors). From January 2010 to August 2015, employment growth in the housing and manufacturing sectors increased 5.5 percent and 4.3 percent, respectively, well below the Fifth District industry average of 8.1 percent.

While job loss in the manufacturing and construction sectors was severe across the Fifth District during the recession, there was considerable variation among states. But in the Fifth District states with the largest manufacturing sectors, Virginia, North Carolina, South Carolina, and West Virginia, the losses were fairly comparable — between 14 percent and 19 percent. Job growth since January 2010 has varied, as well. There has been little increase in jobs in Virginia and West Virginia, despite strong production in auto manufacturing and chemical manufacturing in West Virginia. In contrast, the auto and aerospace sectors have driven growth in the manufacturing sector in North Carolina and South Carolina in recent years. Manufacturing employment in both states has improved considerably — up 7 percent and 13 percent, respectively, but still remains well below pre-recession levels.

The decline in the construction sector during the recession varied across jurisdictions. South Carolina experienced the largest decline, followed by North Carolina — 33 percent and 27 percent, respectively. Interestingly, the metro areas of the Fifth District that were most caught up in the housing boom and subsequent collapse were in the northern part of the district, Washington, D.C., and Baltimore. Yet the decline in construction employment in Maryland and the District of Columbia was not as severe as in the Carolinas.

In any event, the recovery in construction employment has been lackluster. With the exception of West Virginia, there have been increases in construction jobs, but the level of employment in August 2015 was well below pre-recession levels. The recovery in the single-family housing market has been very moderate; while construction of multi-family housing units has been strong, particularly in the Washington, D.C., region, it has not been enough to offset the softness in the single-family market.

Where there have been significant gains in employment in recent years has been in services. The professional and business services sector, the leisure and hospitality sector, and the education and health sector have each seen significant growth since 2010 with increases of 16 percent, 15 percent, and 11 percent, respectively. Notably, these sectors all experienced more moderate employment declines (or no decline at all in the case of education and health) relative to other sectors during the downturn. Professional and business services and leisure and hospitality declined 4.8 percent and

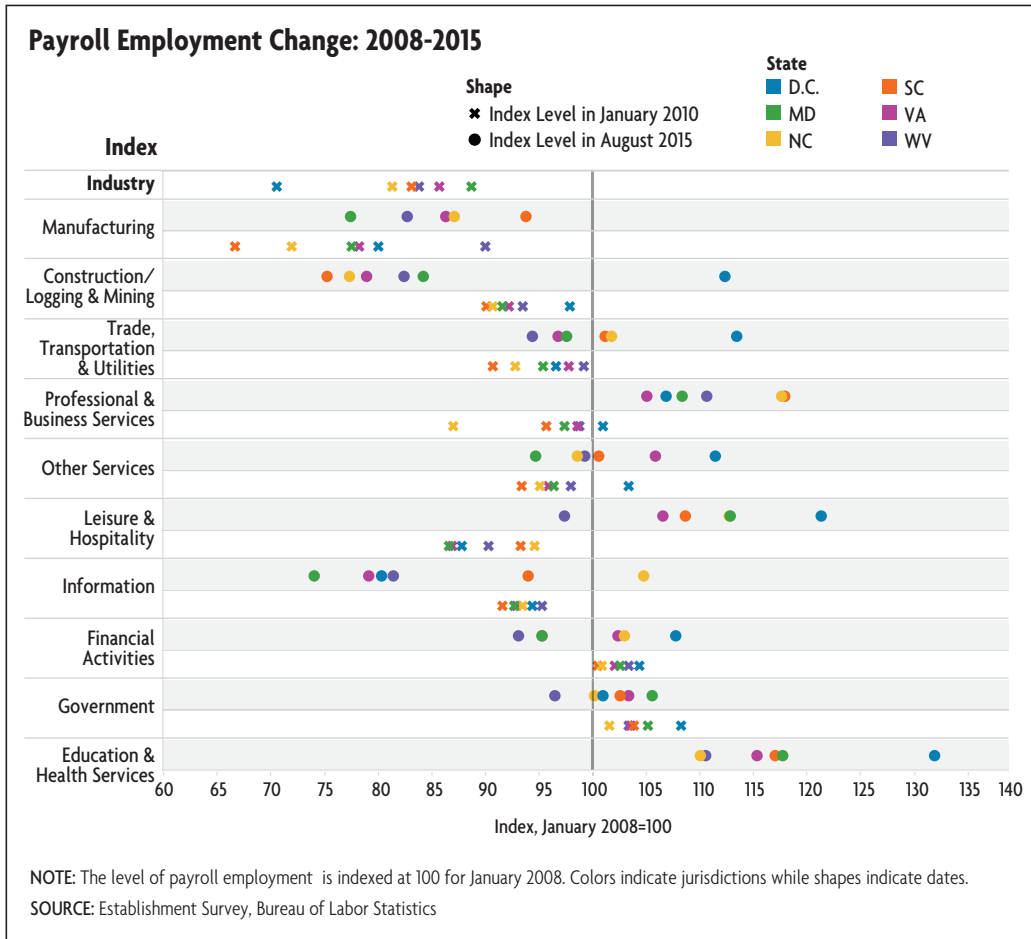
4.3 percent, respectively, while employment in education and health grew by 3.6 percent from January 2008 to January 2010. The employment increases in the professional and business services and leisure and hospital sectors have been widespread across jurisdictions, with the exception of leisure and hospitality in West Virginia, where there has been little to no net growth since January 2010.

Different factors influenced the goods-producing and service-providing sectors across Fifth District jurisdictions. As mentioned earlier, the growth of the auto and aerospace sectors in the southern part of the district resulted in employment gains and additional investment in those sectors, as did ancillary sectors that served as suppliers and distributors. The shale gas boom affected the demand for manufactured goods, construction, and the provision of services in West Virginia. Federal spending cuts heavily impacted service-providing sectors in the northern jurisdictions.

The chart illustrates the employment losses during the downturn and employment gains since by industry for each of the six jurisdictions in the Fifth District. The level of payroll employment is indexed at 100 for January 2008, when payroll employment peaked in the United States; the level of employment in January 2010, the trough in employment, is shown with an “x” and the August 2015 level with a circle. Thus, if an industry lost jobs during the recession, there would be an x at a level below 100 for January 2010. Employment growth during the recovery is indicated by a circle at an index level to the right of the corresponding “x.” Circles at index levels greater than 100 indicate that the state’s industry sector more than fully recovered the jobs lost during the recession; for example, an index value of 103 in August 2015 would indicate that employment was 3 percent higher than at the beginning of the recession (January 2008).

### Occupation Trends

What is also notable is that industries that employ more higher-skilled workers (professional and business services, education and health sector) and those that employ more lower-skilled workers (leisure and hospitality) saw the largest increases over the past five years. At the same time, the industries with more middle-skilled workers (production and trades) experienced the weakest recoveries. These



observations are just suggestive, however. It would also be useful to look at the changes in occupations during the recovery to get a better sense of whether higher-skilled and lower-skilled workers fared better during the recovery than middle-skilled workers.

The BLS publishes detailed labor market data by occupation. There are 22 major occupation groups and over 800 detailed occupations for which the bureau publishes data on the number of people employed as well as the distribution of wages. The occupation data is not normally used as a source for evaluating the labor market over the business cycle, however, due to the nature of the survey. The Occupational Employment Statistics survey (OES) is reported annually, but the data is collected from establishments in six semi-annual panels for three consecutive years. Every six months, a new panel is added and the oldest is dropped. In addition, there have been numerous classification and methodological changes to the survey. As a consequence, the BLS cautions that it is difficult to use OES data for comparisons across short time periods. Still, a careful use of the data to examine two periods far enough apart and after the changes made to the survey should allow for a comparison — with the important caveat that the BLS did not create this survey with the intention of the data being used for time series analysis.

The table on the next page lists the largest 10 major occupation groups in the Fifth District, including each group’s share of total occupations for each jurisdiction and median

## Occupation Profile by State

Major Occupation Group	Percentage of Total						Median Annual Salary					
	DC	MD	NC	SC	VA	WV	DC	MD	NC	SC	VA	WV
All Occupations	100	100	100	100	100	100	64,890	40,830	32,510	30,660	37,550	29,410
Office and Administrative Support Occupations	12.2	15.8	15.2	15.7	14.8	15.7	45,550	35,650	31,100	29,310	32,800	26,680
Sales and Related Occupations	3.9	10.0	10.9	11.1	10.6	10.0	28,240	25,450	24,260	21,680	24,790	19,950
Food Preparation and Serving Related Occupations	7.9	8.3	9.7	9.8	8.6	9.3	22,500	19,170	18,480	18,370	19,400	18,200
Healthcare Practitioners, Technical and Support Occupations	6.2	8.8	9.9	9.0	7.7	11.1	62,951	56,797	44,038	44,075	48,833	41,876
Transportation and Material Moving Occupations	1.8	5.9	7.2	6.9	5.9	7.4	37,340	31,750	27,320	26,760	30,010	28,560
Education, Training, and Library Occupations	5.1	6.6	6.4	5.9	6.5	5.7	60,040	53,340	40,110	44,390	46,130	41,490
Production Occupations	0.8	3.1	8.2	9.9	4.8	5.7	49,900	34,640	29,450	32,280	31,800	33,000
Business and Financial Operations Occupations	15.3	6.3	4.6	3.7	6.8	3.0	86,850	73,230	62,140	53,590	73,710	52,530
Management Occupations	11.7	5.6	4.4	4.3	4.6	4.3	128,390	111,160	100,420	82,170	113,930	69,060
Installation, Maintenance, and Repair Occupations	1.4	3.9	4.1	4.5	3.9	5.1	54,170	45,990	40,270	38,710	43,740	35,220
Top 10 Major Occupation Groups	66.3	74.4	80.5	80.8	74.3	77.3	58,256	48,001	40,918	38,363	45,699	35,998

NOTE: May 2014 data SOURCE: Occupational Employment Survey, Bureau of Labor Statistics

annual salary. The five largest occupation groups within the Fifth District are office and administrative support (15.1 percent of all occupations), sales (10.3 percent), food preparation and serving (9.0 percent), transportation and material moving (6.3 percent), and education, training, and library (6.3 percent); this is very similar to the top five occupation groups for the entire United States.

The differences in salaries among occupations typically reflect the education level and experience required. For the highest-paying occupation group, management, the majority of the detailed occupations require a bachelor's degree or higher with five years or more of experience. In contrast, production occupations require moderate- to long-term training instead of a postsecondary or college degree.

Within the major occupation groups, there is significant variation. For example, the median annual salary in Maryland for the office and administrative support occupation category is \$35,650, but the annual salary at the 10th and 90th percentile is \$19,550 and \$59,610, respectively; for the sales and related occupations category, the annual salary at the 10th and 90th percentile is \$16,730 and \$73,760, respectively. So it is important to note that the median salary for the major occupation categories incorporate the median education and skills level across all detailed occupations and that some occupations within a major occupation group will have higher (or lower) education level and perhaps additional skills requirements. As a consequence, they will command a higher (or lower) salary.

So how have occupations changed since the end of the Great Recession in terms of employment and wages? The table at the top of the next page lists the changes in Fifth District employment and median annual salary from 2010 to 2014 for the 22 major occupation categories; the categories are ranked by 2010 median annual salary. The categories

above the box had median annual salaries at least 15 percent greater than the 2010 median annual salary; the categories within the box were within 15 percent of the median; and the categories below had salaries at least 15 percent lower. Each of these three major divisions of the categories represents roughly one-third of all occupations.

Overall, total employment grew by 5.1 percent from 2010 to 2014 according to the OES data, while wage growth was very weak — just 4.5 percent in total over the four-year period. When taking inflation into account, real median annual salaries were negative as inflation grew by 7.3 percent from 2010 to 2014, based on the personal consumption price index. Wages grew faster in percentage terms for higher-salary occupations than for middle-salary or lower-salary occupations: The average increase for higher-salary occupations was 5.6 percent across occupations versus 4.9 percent and 3.3 percent for middle- and lower-salary occupations, respectively.

With respect to the structure of demand for workers, the occupational data show much the same pattern as the industry data: Higher-salary and lower-salary occupations grew at faster rates than middle-salary occupations. Of the nine major occupation groups that had higher 2010 median annual salaries, six experienced an increase in employment and three were relatively flat (below a 1 percent change). Across all higher-salary occupations combined, there was a 6.2 percent increase in employment. Of the seven occupations that had salaries close to the median annual salary in 2010, three experienced an increase, three saw a decline, and one was flat. Overall, employment rose by 1.8 percent for this group. Finally, for the six major occupation categories that had lower median annual salaries in 2010, five experienced an increase while one was flat. In the lower-salary occupations combined, employment rose by 7.9 percent.

The differences in median salary generally reflect education

and skill requirements. Of the nine major categories in the higher-salary group, all but a few require at least a college degree or a college or higher degree and on-the-job training. Also, arts and design as well as education and training are broad categories that contain a mix of occupations, some of which require college or advanced degrees while others require a degree and specific skills or on-the-job training, and still others require no college degree. In contrast, the six lower-salary occupation categories typically do not require a college degree but instead represent occupations that require some on-the-job training. In the middle group, a good number of the occupations require some education (community and social service, some office occupations) or specific skills learned from medium-term to long-term training (installation, maintenance, repair, construction, production).

These results are broadly consistent with work that looks at national occupation trends in prior periods. In his 2010 paper “U.S. Labor Market Challenges over the Longer Term,” David Autor of the Massachusetts Institute of Technology looks at the change in occupation growth from 1979 to 2009 for 10 major occupations. He finds that for the highly educated and highly paid occupations (managerial, professional, and technical), employment growth was robust over the past three decades; growth for service occupations, which disproportionately do not require postsecondary degrees and earn low wages (protective services, food and cleaning services, personal care), was also rapid. In contrast, Autor finds that middle-educated and middle-paid occupations (office workers, production, craft and repair, and operators, fabricators and laborers) grew at slower pace and that the pace declined over time.

These trends are evident within the Fifth District at the state level, as well. With the exception of the District of Columbia, the middle-salary occupation group grew slower than higher- and lower-salary occupations. In three of the Fifth District jurisdictions, lower-salary occupations grew faster than higher-salary occupations (Maryland, North Carolina, and Virginia); two experienced faster growth of higher-salary occupations than lower-salary (District of Columbia and West Virginia); and in one state, the growth rates were the same (South Carolina).

### Employment and Median Annual Salary Change by Occupation (2010-2014)

	Share of Total Occupations (percent)	Employment (percent change)	Median annual salary (percent change)	2010 Median Annual Salary
NOTE: Occupation categories above, within, and below the box are above, within, and below 15 percent of the median, respectively.				
Management Occupations	5.02	0.7	8.3	97,594
Legal Occupations	1.06	7.3	4.0	85,456
Computer and Mathematical Occupations	3.74	14.1	7.3	80,701
Architecture and Engineering Occupations	1.81	-0.2	7.9	72,003
Life, Physical, and Social Science Occupations	1.07	8.3	4.7	68,315
Business and Financial Operations Occupations	5.85	11.8	7.4	65,464
Healthcare Practitioners and Technical Occupations	5.97	8.3	3.0	57,712
Arts, Design, Entertainment, Sports, and Media Occupations	1.27	4.3	7.0	46,539
Education, Training, and Library Occupations	6.30	0.4	0.5	45,622
Installation, Maintenance, and Repair Occupations	3.98	5.6	5.9	39,571
Community and Social Service Occupations	1.35	-2.8	7.7	39,094
Protective Service Occupations	2.72	7.1	1.2	36,433
Construction and Extraction Occupations	3.91	-1.8	5.0	35,970
All Occupations	100.00	5.1	4.5	35,081
Farming, Fishing, and Forestry Occupations	0.16	-29.3	N/A	34,033
Office and Administrative Support Occupations	15.14	0.3	4.8	31,054
Production Occupations	6.04	4.9	5.2	29,859
Transportation and Material Moving Occupations	6.31	4.7	4.1	27,794
Healthcare Support Occupations	2.88	0.4	4.0	23,677
Sales and Related Occupations	10.27	7.3	2.4	23,532
Building and Grounds Cleaning and Maintenance Occupations	3.31	3.3	4.5	21,345
Personal Care and Service Occupations	2.79	22.2	2.7	20,158
Food Preparation and Serving Related Occupations	9.05	10.6	2.0	18,609

SOURCE: Occupational Employment Survey, Bureau of Labor Statistics

### Conclusion

There has been significant improvement in the labor market since the end of the Great Recession. Total payroll employment growth has fully recovered in each jurisdiction in the Fifth District; however, employment levels in some sectors remain below their pre-recession levels. Notably, in most jurisdictions, employment in the sectors hit the hardest remains well below its pre-recession level.

At the same time, employment growth in several service sectors that were least affected by the recession have shown strong growth in recent years. Relatedly, there has been significant growth in higher-salary and higher-skilled occupations and lower-salary and lower-skilled occupations in recent years. Growth in middle-salary and middle-skilled occupations has been more modest, however. This pattern is consistent with studies that have shown a widening gap between higher- and lower-skilled occupations and middle-skilled occupations in the United States and other advanced economies. Lastly, wage growth was very weak from 2010 to 2014. The annual median salary did not keep pace with inflation, although occupations with higher skill levels fared better than those with lower skill levels.

**EF**

# STATE DATA, Q1:15

	DC	MD	NC	SC	VA	WV
<b>Nonfarm Employment (000s)</b>	<b>760.9</b>	<b>2,640.8</b>	<b>4,215.8</b>	<b>1,984.3</b>	<b>3,788.9</b>	<b>760.7</b>
Q/Q Percent Change	0.0	0.2	0.7	0.7	0.0	-0.3
Y/Y Percent Change	1.5	1.5	2.9	2.8	0.8	0.0
<b>Manufacturing Employment (000s)</b>	<b>1.0</b>	<b>102.3</b>	<b>458.7</b>	<b>231.8</b>	<b>233.5</b>	<b>48.4</b>
Q/Q Percent Change	0.0	-0.6	0.9	-0.5	0.6	1.8
Y/Y Percent Change	0.0	-1.4	3.0	2.2	1.0	1.0
<b>Professional/Business Services Employment (000s)</b>	<b>161.7</b>	<b>426.3</b>	<b>590.9</b>	<b>256.5</b>	<b>675.8</b>	<b>68.3</b>
Q/Q Percent Change	0.9	-0.1	1.2	-1.6	0.0	0.6
Y/Y Percent Change	3.7	1.7	6.2	4.3	0.3	5.0
<b>Government Employment (000s)</b>	<b>236.7</b>	<b>507.3</b>	<b>712.0</b>	<b>359.5</b>	<b>706.0</b>	<b>152.6</b>
Q/Q Percent Change	0.3	0.1	-0.4	0.1	-0.2	-0.8
Y/Y Percent Change	0.5	1.0	-0.4	1.5	0.3	0.5
<b>Civilian Labor Force (000s)</b>	<b>385.0</b>	<b>3,117.3</b>	<b>4,677.4</b>	<b>2,237.1</b>	<b>4,249.1</b>	<b>773.7</b>
Q/Q Percent Change	0.3	0.4	1.1	1.1	0.3	-0.6
Y/Y Percent Change	3.5	0.5	0.9	3.1	0.1	-2.6
<b>Unemployment Rate (%)</b>	<b>7.7</b>	<b>5.4</b>	<b>5.3</b>	<b>6.6</b>	<b>4.7</b>	<b>6.2</b>
Q4:14	7.7	5.5	5.5	6.6	4.8	6.0
Q1:14	7.8	6.0	6.5	6.2	5.3	6.8
<b>Real Personal Income (\$Bil)</b>	<b>43.4</b>	<b>305.0</b>	<b>368.7</b>	<b>167.7</b>	<b>393.8</b>	<b>62.2</b>
Q/Q Percent Change	2.1	1.4	1.5	1.4	1.3	0.5
Y/Y Percent Change	3.8	4.2	4.9	5.1	3.5	2.5
<b>Building Permits</b>	<b>768</b>	<b>3,171</b>	<b>11,718</b>	<b>6,814</b>	<b>6,515</b>	<b>581</b>
Q/Q Percent Change	12.0	-16.1	-7.2	4.2	-5.5	8.4
Y/Y Percent Change	-36.9	-12.0	6.3	-1.8	3.6	54.1
<b>House Price Index (1980=100)</b>	<b>715.1</b>	<b>430.6</b>	<b>320.1</b>	<b>325.3</b>	<b>417.8</b>	<b>224.7</b>
Q/Q Percent Change	-0.5	0.2	1.6	1.8	0.1	-1.4
Y/Y Percent Change	6.4	3.6	4.9	6.1	3.8	1.2

**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.

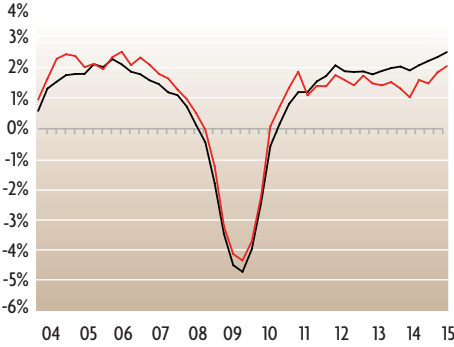
**SOURCES:**

Real Personal Income: Bureau of Economic Analysis/Haver Analytics.  
 Unemployment Rate: LAUS Program, Bureau of Labor Statistics, U.S. Department of Labor, <http://stats.bls.gov>.  
 Employment: CES Survey, Bureau of Labor Statistics, U.S. Department of Labor, <http://stats.bls.gov>.  
 Building Permits: U.S. Census Bureau, <http://www.census.gov>.  
 House Prices: Federal Housing Finance Agency, <http://www.fhfa.gov>.

For more information, contact Michael Stanley at (804) 697-8437 or e-mail [michael.stanley@rich.frb.org](mailto:michael.stanley@rich.frb.org)

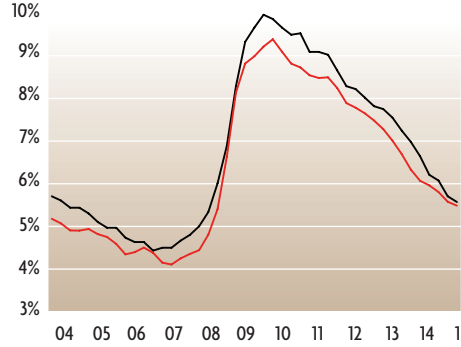
### Nonfarm Employment

Change From Prior Year  
First Quarter 2004 - First Quarter 2015



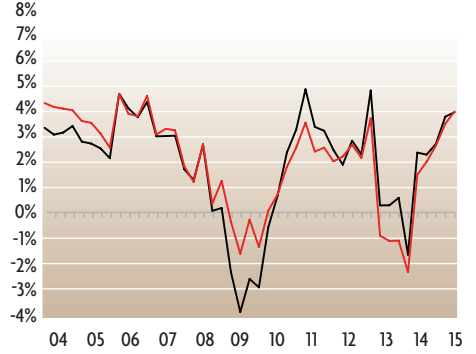
### Unemployment Rate

First Quarter 2004 - First Quarter 2015



### Real Personal Income

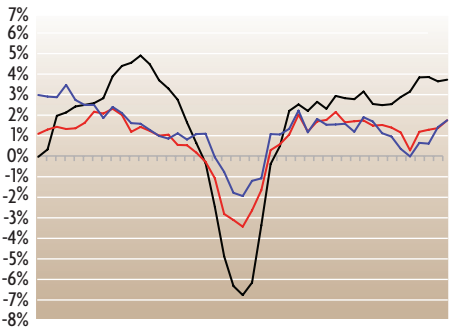
Change From Prior Year  
First Quarter 2004 - First Quarter 2015



— Fifth District — United States

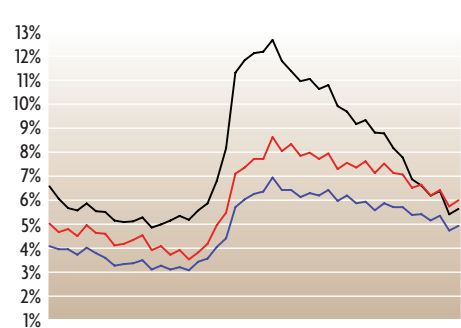
### Nonfarm Employment Major Metro Areas

Change From Prior Year  
First Quarter 2004 - First Quarter 2015



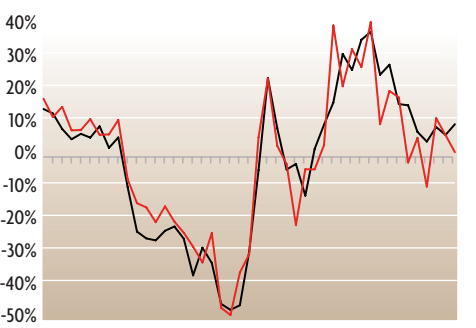
### Unemployment Rate Major Metro Areas

First Quarter 2004 - First Quarter 2015



### Building Permits

Change From Prior Year  
First Quarter 2004 - First Quarter 2015



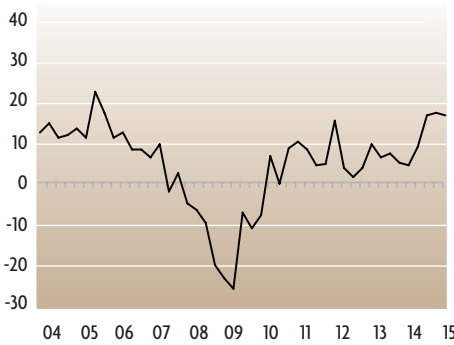
— Charlotte — Baltimore — Washington

— Charlotte — Baltimore — Washington

— Fifth District — United States

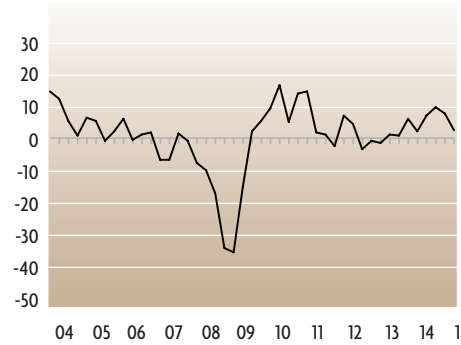
### FRB—Richmond Services Revenues Index

First Quarter 2004 - First Quarter 2015



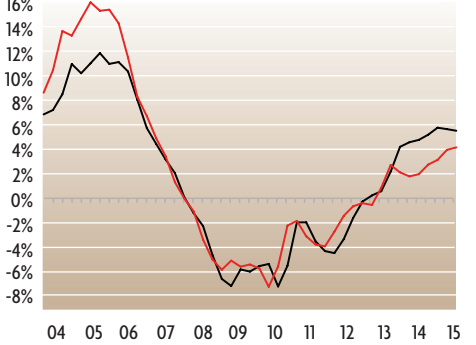
### FRB—Richmond Manufacturing Composite Index

First Quarter 2004 - First Quarter 2015



### House Prices

Change From Prior Year  
First Quarter 2004 - First Quarter 2015



— Fifth District — United States

# METROPOLITAN AREA DATA, Q1:15

	Washington, DC	Baltimore, MD	Hagerstown-Martinsburg, MD-WV
<b>Nonfarm Employment (000s)</b>	<b>2,535.9</b>	<b>1,335.2</b>	<b>101.8</b>
Q/Q Percent Change	-1.4	-2.1	-2.6
Y/Y Percent Change	1.7	1.6	0.0
<b>Unemployment Rate (%)</b>	<b>4.7</b>	<b>5.7</b>	<b>5.7</b>
Q4:14	4.8	5.9	5.7
Q1:14	5.1	6.4	6.2
<b>Building Permits</b>	<b>4,861</b>	<b>1,305</b>	<b>202</b>
Q/Q Percent Change	-2.1	-23.0	-39.0
Y/Y Percent Change	-26.4	7.9	-30.3

	Asheville, NC	Charlotte, NC	Durham, NC
<b>Nonfarm Employment (000s)</b>	<b>179.6</b>	<b>1,081.2</b>	<b>293.5</b>
Q/Q Percent Change	-1.5	-0.8	-0.2
Y/Y Percent Change	3.9	3.6	2.3
<b>Unemployment Rate (%)</b>	<b>4.2</b>	<b>5.3</b>	<b>4.6</b>
Q4:14	4.4	5.5	4.7
Q1:14	5.0	6.4	5.2
<b>Building Permits</b>	<b>373</b>	<b>4,170</b>	<b>1,044</b>
Q/Q Percent Change	16.6	2.1	-1.0
Y/Y Percent Change	28.2	14.0	65.2

	Greensboro-High Point, NC	Raleigh, NC	Wilmington, NC
<b>Nonfarm Employment (000s)</b>	<b>354.7</b>	<b>565.6</b>	<b>116.1</b>
Q/Q Percent Change	-0.1	-1.4	-1.4
Y/Y Percent Change	3.3	3.7	3.8
<b>Unemployment Rate (%)</b>	<b>5.5</b>	<b>4.5</b>	<b>5.1</b>
Q4:14	5.8	4.5	5.3
Q1:14	7.0	5.2	6.5
<b>Building Permits</b>	<b>419</b>	<b>2,978</b>	<b>388</b>
Q/Q Percent Change	-39.0	-1.3	-37.5
Y/Y Percent Change	-3.9	16.4	-32.4

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



	Winston-Salem, NC	Charleston, SC	Columbia, SC
<b>Nonfarm Employment (000s)</b>	<b>253.0</b>	<b>323.4</b>	<b>375.7</b>
Q/Q Percent Change	-1.5	-0.9	-0.4
Y/Y Percent Change	1.6	3.1	1.9
<b>Unemployment Rate (%)</b>	<b>5.1</b>	<b>5.7</b>	<b>6.0</b>
Q4:14	5.3	5.7	6.0
Q1:14	6.3	5.2	5.5
<b>Building Permits</b>	<b>475</b>	<b>1,243</b>	<b>961</b>
Q/Q Percent Change	30.1	-10.9	8.8
Y/Y Percent Change	59.9	-42.0	2.0
	Greenville, SC	Richmond, VA	Roanoke, VA
<b>Nonfarm Employment (000s)</b>	<b>392.7</b>	<b>628.1</b>	<b>159.2</b>
Q/Q Percent Change	-0.7	-2.0	-1.9
Y/Y Percent Change	3.0	1.4	0.8
<b>Unemployment Rate (%)</b>	<b>5.7</b>	<b>5.0</b>	<b>4.7</b>
Q4:14	5.9	5.1	4.8
Q1:14	5.3	5.7	5.4
<b>Building Permits</b>	<b>1,580</b>	<b>961</b>	<b>N/A</b>
Q/Q Percent Change	22.0	16.6	<b>N/A</b>
Y/Y Percent Change	71.4	22.4	<b>N/A</b>
	Virginia Beach-Norfolk, VA	Charleston, WV	Huntington, WV
<b>Nonfarm Employment (000s)</b>	<b>744.7</b>	<b>121.6</b>	<b>139.0</b>
Q/Q Percent Change	-1.6	-2.1	-2.8
Y/Y Percent Change	0.7	-0.2	0.7
<b>Unemployment Rate (%)</b>	<b>5.2</b>	<b>6.4</b>	<b>6.2</b>
Q4:14	5.3	5.9	6.0
Q1:14	5.9	6.6	7.0
<b>Building Permits</b>	<b>1,196</b>	<b>80</b>	<b>31</b>
Q/Q Percent Change	-25.9	1,500.0	-54.4
Y/Y Percent Change	20.4	3,900.0	-27.9

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# Are Large Excess Reserves a Problem for the Fed?

BY JOHN A. WEINBERG

During the financial crisis of 2007-2008 and the Great Recession, the Federal Reserve undertook a number of extraordinary actions to bolster the economy. These included large-scale purchases of assets like U.S. Treasuries and mortgage-backed securities, which increased the Fed's balance sheet from roughly \$900 billion in 2007 to \$4.5 trillion today.

A direct consequence of those purchases was an increase in the monetary base of the economy, which is composed of currency and bank reserves. When the Fed purchases assets, it adds reserves to the banking system. Federal Reserve member banks are required to hold some fraction of their deposits in reserve at the Fed, but they have historically held little more than this minimum. As a result of the Fed's crisis measures, however, excess reserves held by banks have grown from about \$2 billion in 2008 to \$2.5 trillion today.

This increase in the monetary base represents the potential for an enormous increase in broader monetary aggregates — which include bank deposits held by households and businesses — if banks were to use some or all of their excess reserves to support new lending. If this were to happen, we would also eventually expect to see a significant uptick in inflation, the result of “too many dollars chasing too few goods.” But, at least so far, that is not what we have observed. For the last several years, inflation has been stable below 2 percent. That is, not only has inflation not risen, but it has been stubbornly running below the Fed's longer-term inflation goal. Why would this be the case?

The answer could lie partly in the Fed's ability to pay interest on reserves. Economic fundamentals determine the demand for bank credit as well as the ultimate supply of funds from the economy's savers. These conditions influence the profitability to banks of extending credit. A factor that banks consider when deciding how much lending to supply to households and businesses is the return they could earn on the same money by holding it as a reserve balance at the Fed. The fact that the expansion in bank reserves has not been accompanied by an unusually large expansion of bank lending could suggest that the interest rate paid on reserves has been viewed as a good alternative for much of the last seven years. In other words, banks have been content to keep a lot of their funds parked at the Fed.

But that view could shift if economic conditions change. If economic growth increased and the Fed did not increase interest on reserves to match, it could become relatively more profitable for banks to issue loans. In this situation, the unprecedented amount of reserves held by banks has the

potential to both shrink the window for monetary policymakers to react and increase the inflationary consequences of not acting in time.

In the past, when the demand for loans increased, banks needed to acquire additional funds to make those loans. This higher demand for funds would tend to bid up the federal funds rate, signaling to Fed policymakers to either raise their target for that rate or increase the supply of reserves to offset demand if they wanted to keep rates the same. But in the current environment, the banking system already has a large supply of reserves with which to support loans, meaning the Fed might not get the same signal to increase rates before prices begin rising.

Further complicating matters is the fact that the natural rate of interest — the interest rate compatible with a stable price level at a given moment in time — is not directly observable. Economists, such as Thomas Laubach of the Federal Reserve Board of Governors and John Williams, president of the San Francisco Fed, have attempted to estimate a range for the natural rate using economic data. And recently, my Richmond Fed colleagues Thomas Lubik and Christian Matthes suggested an alternative measure of the natural interest rate. Both measures suggest that the current real interest rate may already be below the natural rate, but they are also both subject to a degree of uncertainty, making it difficult for the Fed to set its interest rate target based solely on such estimates.

This uncertainty adds to the risk associated with a high level of excess reserves. And for any given level of the natural real interest rate, there may be some upper limit to the amount of excess reserves the banking system can support without raising the price level. According to research by Richmond Fed economist Huberto Ennis, at some point banks would need to raise more capital to accommodate large reserve balances, which would raise the price level.

So, how much should policymakers worry about excess reserves? On the one hand, the factors discussed here suggest some cause for concern. On the other hand, the Fed has a good track record of targeting the appropriate rates in the two decades prior to the Great Recession (the period known as the Great Moderation), and the current low levels of inflation suggest that the Fed has largely continued that record. At the very least, monetary policymakers should be especially vigilant when operating in an environment of large excess reserves. **EF**

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

# NEXT ISSUE

## **Disaster Economics**

Economists typically assess measures taken to prevent disasters by comparing their costs and benefits. But this calculus becomes much more difficult when the probability of an event — like a terrorist attack, asteroid strike, or severe climate change — is highly uncertain and the consequences of non-prevention are potentially catastrophic.

## **The End of Globalization?**

In 2008 and 2009, the volume of world trade suffered its greatest collapse in the postwar era. Since then, it has barely kept pace with GDP growth. Economists are debating whether the recent slow growth in trade is cyclical or instead might persist for years to come. The answer could have important implications for the health of the global economy — and perhaps even for world peace.

## **D.C. Congestion Pricing**

Traffic-clogged Washington, D.C., is looking at new ways to price public goods such as roads, mass transit, and parking so the city can get moving again.

## **Federal Reserve**

Following the financial crisis of 2007-2008, regulators introduced requirements for financial institutions to hold enough liquidity to withstand periods of distress. Liquidity requirements are not new — in fact, they were a key tool aimed at preventing bank runs before the creation of the Fed. What lessons do those historical measures hold for central banks today, and how has economists' understanding of liquidity requirements changed since then?

## **Policy Update**

Securities-based crowdfunding is a new way for companies to raise capital. But it comes with some regulatory strings.

## **Interview**

Economist Eric Leeper of Indiana University on the interplay between fiscal and monetary policies, how little we know about the effects of fiscal policy, and what's missing from modern macro models.

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## Special Issue of *Economic Quarterly* Revisits the Financial Crisis

The Richmond Fed's newly released *Economic Quarterly* is a special issue reprinting past *Annual Report* articles focusing on the financial crisis. Taken together, these essays reflect much of the thinking the Richmond Fed has done on the sources of financial instability and the means by which public policy can promote stability.

### IN THIS ISSUE:

- **The Pursuit of Financial Stability: Essays from the Federal Reserve Bank of Richmond Annual Reports** by John A. Weinberg
- **The Financial Crisis: Toward an Explanation and Policy Response** by Aaron Steelman and John A. Weinberg
- **Systemic Risk and the Pursuit of Efficiency** by Kartik B. Athreya
- **Should the Fed Have a Financial Stability Mandate? *Lessons from the Fed's First 100 Years*** by Renee Haltom and Jeffrey M. Lacker
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