FOURTH QUARTER 2012

REGION FOCUS

THE FEDERAL RESERVE BANK OF RICHMOND

PUTTING BANKS TO THE (STRESS) TEST

WILL BANKS BE READY FOR THE NEXT CRISIS?
STRESS TESTS AIM TO FIND OUT

Mobile Money

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Interview with Steven Landsburg

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The Dangers of the Fed Conducting Credit Policy

As president of the Richmond Fed, one of my greatest responsibilities and honors is serving on the Federal Open Market Committee (FOMC), the Fed's main policymaking body. The FOMC is composed of the Fed's Board of Governors, along with presidents of the other Reserve Banks. Together we work hard — and collegially — to achieve a consensus on policy decisions whenever possible. For example, regarding the broad direction monetary policy took throughout 2012, a year which covered my rotation as a voting Committee member, my colleagues and I have been in full agreement on the decision to leave interest rates near zero to support the sluggish economic recovery.

An inevitable byproduct of setting policy via committee, however, is that there will sometimes be disagreements about the correct course of action. In 2012, I found myself on the dissenting side for three reasons. First, I have objected to the language that the Committee included in its post-meeting press releases describing how long it expects to keep interest rates low. I believe such "forward guidance" could be misinterpreted in one of two ways: either that the Committee believes the economy is weaker than people had thought, or that the Committee has a diminished commitment to keeping inflation at 2 percent. Second, I disagreed with the Committee's choice in September to further increase the size of the Fed's balance sheet through asset purchases, because I judged that doing so was unlikely to stimulate the economy much without also raising inflation. Finally, I disagreed with the FOMC's chosen method of balance sheet expansion starting in its September meeting, namely, through the purchase of mortgage-backed securities (MBS) rather than the U.S. Treasury securities the Fed has traditionally restricted itself to buying.

Buying MBS in large quantities is intended to reduce borrowing rates for conforming home mortgages, and thereby provide support to that recovering market. However, it necessarily does so only by reducing rates for borrowers in other markets by less than would be the case if purchases were confined to U.S. Treasury securities. Therefore, by purchasing MBS, the Fed is attempting to tilt the flow of credit toward one particular economic sector. Markets generally are a better judge of creditworthiness than any central authority, I believe, so the Fed's actions risk distorting credit allocation and depriving some sectors of the credit they deserve.

If such purchases are to be made at all, they should be made with specific authorization from Congress. By purchasing MBS, the Fed conducts what is essentially fiscal policy without the checks and balances built into the normal appropriations process. The Fed has the ability to engage in credit allocation due to its operational independence — an important feature for protecting monetary policy decisions from short-run political pressures — which allows it to select the size as well as composition of its balance sheet. But by using that independence to favor specific sectors, the Fed opens itself up to criticism that could jeopardize that very independence in making the monetary policy decisions that are, in fact, central to its mandate.

One could conceivably justify redirecting credit flows if it appeared that unfettered credit markets were doing an ineffective job of meeting a particular sector's credit needs. In the case of mortgage finance, the opposite appears to be true. Housing finance historically has benefited from heavy subsidies, which arguably contributed to excessive household leverage during the boom. Many of those subsidies continue, and it's hard to see a case for adding to existing distortions.

The debate over which assets a central bank should purchase long predates my term on the FOMC. In fact, several important contributors to that literature have close ties to the Richmond Fed, including my predecessor, Al Broaddus, former research director Marvin Goodfriend, current Richmond Fed economist Robert Hetzel, and visiting scholar Robert King. While I certainly share the desire of my colleagues on the FOMC to support the economic recovery, my assessment, based on the arguments made by these and other scholars, is that the central bank's forays into credit policy fall outside its mandate, and that the long-term risks must be weighed carefully against whatever perceived short-term benefits may accrue from such actions.

To a large extent, the recent lack of unanimity on the FOMC reflects the unique challenges facing the economy in the aftermath of the very severe recession we have experienced — in particular, enduring economic weakness despite persistently low interest rates. That environment has required drawing policy analysis from the very frontier of economic research. Though we might occasionally come to different conclusions, I am confident that every member of the FOMC is united in pursuit of the Fed's prime objectives of 2 percent average inflation and maximum sustainable employment. **RF**

JEFFREY M. LACKER
PRESIDENT
FEDERAL RESERVE BANK OF RICHMOND

Heartland Corridor
W.Va. Terminal Will Fast-Track Freight

A $27 million terminal that will smooth and increase the flow of freight to the Midwest is now under construction near Huntington, W.Va.

Once the terminal is complete, by the fall of 2014, companies in the vicinity will be able to connect easily to Midwest markets, such as Chicago, and to ports on the Eastern Seaboard. At the terminal, truck cargo will be shifted onto trains stacked two containers high. (Facilities that allow switching of freight containers between modes of transport, such as rail to truck or ship to rail, are known as "intermodal" terminals.)

"The nice thing about the location is that it lets a company locate in southern Ohio or southern West Virginia and have access to the same frequency and quality of intermodal service that somebody in Columbus or Chicago would have," says Mark Burton, a transportation economist at the University of Tennessee. "It evens the playing field, and lets people in rural areas have access to the same type of services that more urban areas have."

The terminal, called the Heartland Intermodal Gateway at Prichard, is intended to draw economic activity as well as speed transit. Burton compares it to the Virginia Inland Port in Front Royal, with its millions of feet in distribution centers. "To attract light manufacturing and distribution, you don't necessarily have to be in a metro area, but you need access to lots of metro areas within a couple of hundred miles."

Where rail is available, shipping goods over distances of more than 500 miles or so tends to be cheaper by rail than by truck. Moving goods by truck to container ships that call on eastern ports, from Pittsburgh or Cincinnati, adds between $400 and $600 per shipment, Burton says.

The money to build the terminal will come from taxpayers: $12 million from a federal Transportation Investment Generating Economic Recovery (TIGER) grant, and the rest from a state tax, levied since 2009. The tax has brought in roughly $4 million per year, according to Doug York, executive director of the West Virginia Public Port Authority, which owns the facility. The terminal will occupy 68 acres donated by Norfolk Southern Corp.

The intermodal terminal's location lies along the Heartland Corridor, a shortcut that shaves 233 miles — a day's transit — from Norfolk Southern's longer route to Chicago. The corridor runs through Roanoke, Va., and southern West Virginia by way of Columbus, Ohio. Preparing the route involved raising the roofs of 28 rail tunnels, four in Virginia and 24 in West Virginia, to accommodate double-stacked railcars moving freight from Hampton Roads port terminals to the Midwest. Norfolk Southern finished the $151 million project, begun in 2007, in September 2010.

"We have been able to divert a lot of our intermodal traffic to the corridor from the longer routes we used before," says Norfolk Southern spokesman Robin Chapman. Some of Norfolk Southern's biggest customers, he notes, are trucking companies; many transport goods between cities by rail.

One hoped-for piece of the Heartland Corridor is still missing, however: a proposed intermodal terminal in Roanoke, Va. Though legal issues regarding the site have been resolved, the state funding originally slated for the project needs to be reappropriated, Chapman says. Norfolk Southern has not yet determined when that project will proceed.

— Betty Joyce Nash

An intermodal terminal at Prichard, W.Va. — 13 miles from Kenova, W.Va. — will smooth and increase the flow of freight to Midwest markets. The terminal will open in 2014.

Silver Bullet

Can Metro's New Silver Line Ease NoVA Traffic?

Washington Dulles International Airport lies about 25 miles from Washington, D.C. When it opened, in 1962, "some folks looked around and said, 'wow, this airport is way, way, out. We have to make a plan to connect it to the city,'" says Marcia McAllister, the communications manager for the Dulles Corridor Metrorail Project. "The rail to Dulles has been envisioned since the airport opened."

Five decades later, the vision is becoming reality: A 23-mile extension of the D.C. region's Metrorail system is under construction. The first phase of the "Silver Line" is scheduled to open at the end of 2013 and will bring the Metro trains to Reston, Va., in Fairfax County. The second phase will extend the Silver Line to the airport and beyond, into eastern Loudoun County, Va., and is projected to open in 2018. The Metropolitan Washington Airports Authority (MWAA) is managing the construction. It will turn the line over to the Washington Metropolitan Area Transit Authority (WMATA) once it is complete.

The entire project will cost an estimated $5.6 billion: $2.9 billion for the first phase and a projected $2.7 billion for the second. The effort cleared a major hurdle last summer when Loudoun County committed $270 million to the second phase. Fairfax County, the Commonwealth of Virginia, the MWAA, and federal loans also are contributing to the funding.

More than half the funding — $3 billion — will come from Dulles Toll Road revenues. The MWAA operates the road and has proposed increasing the one-way full toll from the current $2.25 to $4.50 by 2015. Virginia gave control of the toll road to the MWAA in 2008 to fund the Metrorail extension, according to Thelma Drake, director of Virginia's Department of Rail and Public Transportation.

"Had it not been turned over, that money would be building other infrastructure projects in Northern Virginia. But everyone agreed that the rail was the most important," she says. "Look at the congestion there. You've got to have a way to move people around."

The D.C. metro region's traffic is the worst in the country, according to the Texas Transportation Institute at Texas A&M University. Its commuters spend an average of 74 hours per year stuck in traffic, compared to 71 hours in second-place Chicago and 64 hours in third-place Los Angeles, according to the institute's annual urban congestion study. Tysons Corner, in Fairfax County, is a large employment center, and neighboring Loudoun County's population increased nearly 85 percent between 2000 and 2010, the fifth-fastest growth rate in the country.

A future Metrorail station in Tysons Corner, Va.

PHOTOGRAPHY: DULLES CORRIDOR METRORAIL PROJECT

By 2050, the Metrorail extension could nearly double the number of jobs in Tysons Corner, to 210,000, and increase the population by 364 percent, to 86,000, according to a 2008 study by Stephen Fuller and John McClain of the George Mason University Center for Regional Analysis. In a separate study in 2012, Fuller estimated that Loudoun County's gross county product (GCP) will increase tenfold by 2040, assuming the county gets connected to D.C. via rail. Without Metro, the county could forgo $264 billion in GCP between 2020 and 2040, he concluded.

But more growth could mean even more congestion. "On the one hand, rail will provide more transit capacity in the Dulles Corridor," says Bob Chase, president of the Northern Virginia Transportation Alliance, a nonprofit that advocates for transportation projects in Northern Virginia. "On the other hand, if the Dulles Corridor adds the number of office buildings and residential units that are projected, the net result will be far more new automobile trips than mass transit trips." Still, many residents and business owners are excited about the additional activity that Metrorail will bring — not to mention avoiding a $50 taxi ride to the airport.

—Jessie Romero

Art Reach
"Off the Wall" Plants Paintings

The Walters Art Museum in Baltimore is showing 25 reproductions of its paintings in unexpected places — outdoors. At the Maryland Zoo, "Syria, the Night Watch," a depiction of lions prowling the ruins of a once-great city, is installed near the big cats' habitat. The painting "Art and Liberty," a portrait of an itinerant violinist, went outside the Peabody Institute of Johns Hopkins University, and "Politics in an Oyster House" is outside Bertha's Mussels, a restaurant in Fells Point.

The Walters Art Museum placed reproductions of paintings around the city, including "The Terrace at St. Germain," located at Robert E. Lee Park.

"Off the Wall," an open-air exhibit, runs through April 2013. The art belongs to Baltimoreans: The Walters Art Museum's collection was bequeathed to the city by the two patrons who amassed it, William and Henry Walters.

Marketing Manager Matt Fry characterizes the show as part street art, part marketing, and part community outreach. The framed, weatherized reproductions — which cost about $1,000 apiece — are in parks, near restaurants, outside a bank, and inside City Hall. "It reminds people who we are," he says, "and that we have a fantastic collection."

Leisure attractions draw people to cities. The nonprofit Americans for the Arts reported that about 7 million people attended an arts and culture event in the City of Baltimore in 2011; they spent nearly $122 million, not counting admission fees. A third came from nonresidents.

Fry borrowed the idea of the show from the Detroit Museum of Fine Arts, where he worked before coming to the Walters. "They do clusters of five to seven paintings in different neighborhoods."

"Off the Wall" reaches people who might not visit a museum, Fry says, adding, "and you can't underestimate the fun factor."

— Betty Joyce Nash

PHOTOGRAPHY: THE WALTERS ART MUSEUM

Payback Time
NC Owes $2.5 Billion to Federal Unemployment Fund

As unemployment soared during the recession of 2007-09, most states borrowed from the federal Unemployment Trust Fund to extend benefits to growing numbers of unemployed people. (See "The Great Recession and State Unemployment Insurance Funds," *Region Focus*, First Quarter 2012.) Several states have paid off those debts, but 19 states still owe large amounts of money.

As of Oct. 5, 2012, North Carolina carried a trust fund loan balance of nearly $2.5 billion, down from a high of $2.8 billion in April 2012. Only California and New York owed more, and on a per capita basis, only California and Indiana owed more.

The insolvency of North Carolina's unemployment insurance system reflects a statewide unemployment rate that remained in double digits from early 2009 until early 2012. Since then, the rate has hovered between 9.4 percent and 9.7 percent, well above the national level, but low enough to allow the state's benefits borrowing to stabilize somewhat.

"We are now approaching the break-even point, where the taxes we collect from employers are offsetting our new borrowing," says Larry Parker, a spokesman for the Employment Security Division of the North Carolina Department of Commerce.

The state started borrowing from the federal trust fund in February 2009, and the trust fund began charging nearly 4.1 percent interest on its loans in January 2011. (The 2009 federal stimulus package waived the interest charges until then.) North Carolina made an initial interest payment of $78.5 million in September 2011 and a second interest payment of $83.9 million in September 2012. The interest rate is now a little more than 2.9 percent.

As North Carolina dropped deeper into debt, the state's commerce department hired the W.E. Upjohn Institute for Employment Research in Kalamazoo, Mich., to analyze strategies for returning

the unemployment insurance system to solvency. In May 2012, Upjohn outlined several options, including various combinations of raising unemployment insurance rates, reducing unemployment benefits, issuing bonds, and levying a temporary "solvency tax" on employers.

If the North Carolina General Assembly does nothing and the state's economic projections are accurate, the system would become solvent again in 2017, according to Upjohn. — Karl Rhodes

Largest Unemployment Trust Fund Loan Balances Per Capita

State Loan	Balance[1]	Per Capita[2]
Indiana	$1,763,366,063	272
California	$9,918,376,834	266
North Carolina	$2,490,671,444	261
Nevada	$682,039,900	253
Kentucky	$857,688,727	198
Rhode Island	$198,145,251	188
Connecticut	$631,666,343	177
New York	$3,153,792,952	163
Ohio	$1,789,232,557	155
Wisconsin	$835,600,929	147

[1] Outstanding loan balances as of Oct. 5, 2012
[2] Based on 2010 census population

SOURCE: U.S. Department of the Treasury, Title XII Advance Activities Schedule

Coal Cuts
Low Gas Prices, Falling Demand Bring Shutdowns

Coalfield production and employment go through cycles. In 1940, coal employment in West Virginia peaked at about 130,000. In the third quarter of 2012, the industry employed about 24,000, a huge drop from the peak but still a 17 percent increase over 2010.

Production and employment have very recently been on the decline again, however. One hit came in September when Alpha Natural Resources, based in Bristol, Va., announced production cuts of 16 million tons and employment cuts of 1,200. Alpha is cutting steam coal production in its Appalachian mines by 40 percent, and in its Wyoming mines by 50 percent. Eight mines in Virginia, West Virginia, and Pennsylvania closed. The company is emphasizing "coking" coal, metallurgical coal used in steelmaking, over production of steam coal, used to generate electricity. Coking coal sells at a significant premium to steam coal, according to Chris Haberlin, an analyst at Davenport & Co. in Richmond, Va., who follows the coal industry.

As with many mass layoffs, the effects on the displaced, many of whom spent their careers in the mines, have been punishing. Electrician Tony Gibson worked in coal mines for 26 of his 44 years before the closing of the last mine where he worked, one of Alpha's Guest Mountain mines in Southwest Virginia. "I feel as comfortable below ground as above ground," he says by telephone from his home in Big Stone Gap, Va. His grandfather was a miner, his father, a mechanic in a mine. "The pay scale is so good — $32 an hour."

Gibson has called friends and neighbors in his search for a job in a metallurgical coal mine, but there are few to apply for. Besides, in this remote corner of Virginia, near where Kentucky, Tennessee, and Virginia converge, competition for the shrinking number of mining jobs is stiff. The jobs he's applying for now pay only $8 or $9 per hour; he'd settle for one of those, temporarily, if he could get one.

Several factors are causing the cutbacks. First, steam coal can't compete with today's low natural gas prices, says Haberlin. "Given the glut of natural gas from the shale plays, utilities are making long-term decisions based on the likelihood that natural gas prices will stay low while coal production costs, particularly in central Appalachia, are likely to trend higher."

Second, productivity in Appalachian mines has slipped, driving up costs. "The easy stuff to mine has all been mined out," Haberlin says. "Now, you're getting into coal seams that are geologically difficult to mine, with coal seams that are 36 inches high, where you need compact equipment, and you need people willing to go down and work on their hands and knees."

Last, demand is waning, at least for now. Nationwide, steam coal production has been cut, Haberlin says, by 8 percent to 10 percent in 2012. Over the past 15 years, natural gas and wind have powered new generation capacity, not coal, according to the U.S. Energy Information Institute. The recession and warm winter of 2011-2012 further stifled demand. Stricter environmental regulations also favor cleaner burning natural gas.

Alpha today is the third-largest world supplier of coking coal, and sees opportunities for growth, said its chairman and CEO, Kevin Crutchfield, in a written statement. "Forecasts point to more than 100 million tons of increased seaborne metallurgical coal demand by the end of this decade, and persistent structural supply limitations exist on sources of high-quality metallurgical coal."

In the short run, though, Alpha has even cut its lesser-quality coking coal production by 1.6 million tons. High inventories and slowing production in China and Europe have softened demand. — Betty Joyce Nash

Putting Banks to the (Stress) Test

BY SETH RUBINSTEIN

Will banks be ready for the next crisis? Stress tests aim to find out

Many observers believe that the nation's banking sector was ill-prepared for the recession that began in 2007. Stress testing of banks has been one important part of the effort to prevent, or at least mitigate, a repeat crisis in the future. To stress-test banks, regulators impose a set of adverse economic assumptions — for example, extremely high unemployment — and estimate how a bank would fare under that scenario. The results of these tests can provide an idea of whether banks would be sufficiently prepared if the economy took a turn for the worse. The tests are also intended to restore and maintain market confidence in the financial system.

Several important questions about stress tests remain unanswered — and controversial. For instance, the desirability of disclosing firm-specific stress-test results to the public remains highly disputed. So, too, does the question of whether the tests should follow the traditional approach of focusing on the resilience of each bank individually or whether they should instead focus more on the resilience of the banking sector as a whole in response to a shock that hits many institutions at the same time.

When the first major stress test was introduced in 2009, arguably nothing like it had ever been attempted in the United States before. Without precedents to serve as a guide, stress testing in America has been somewhat experimental so far, putting to the test theories that academics and regulators had been contemplating for some time, but which had not yet made their way into the mean streets of bank supervision. At least one thing is certain: Stress tests are here to stay. The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 mandates annual stress tests of the country's biggest financial institutions.

What Is a Stress Test?

At the root of stress testing is the requirement that banks hold capital. All banks hold capital to help serve as a buffer against unexpected losses, such as those suffered in a recession. In accounting terms, capital is the value that would remain if the bank were sold and all of its creditors paid. Capital raised by issuing common stock is often viewed as the strongest type of buffer against losses. Regulators mandate capital requirements for banks to ensure that in the event of an unexpected decline in asset values, perhaps resulting from a financial downturn, the banking sector's ability to meet its obligations to bondholders will not be impaired. The requirements also reduce the chance that the Federal Deposit Insurance Corporation (FDIC) will incur losses from excessive risk-taking by banks.

Holding that capital, however, is expensive for banks; the investors who supply equity capital demand high returns on it, since they provide the buffer that bears losses first. Generally, moreover, shareholders of banks benefit from employing less equity capital (since issuing more shares to raise capital dilutes their earnings), while bondholders prefer for banks to hold more. Why? Because unlike bondholders, common stockholders have no fixed rights to the bank's assets; they simply receive anything left after the bank has paid bondholders. This is why bondholders prefer that banks have sizeable capital: It reduces their chances of suffering losses.

After the financial crisis hit, confidence in financial markets plummeted, and so did banks' lending, for a variety of reasons. As a tool to restore confidence in the financial system, boost lending, and ensure that banks had sufficient capital buffers in case the recession got even worse, the Fed conducted the Supervisory Capital Assessment Program (SCAP), the first major stress test, in early 2009. All U.S. bank holding companies (BHCs) with more than $100 billion in assets had to participate. That group of 19 institutions collectively accounted for two-thirds of all assets held by U.S. BHCs. (Three of the firms — Bank of America, BB&T, and Capital One — are headquartered in the Fifth District.) The SCAP's successor was the Comprehensive Capital Analysis and Review (CCAR), performed in 2011 and 2012. While the CCAR examined the banks' capital levels under adverse economic assumptions (like the SCAP), it also evaluated the processes banks use internally to gauge their risks and capital levels. The Federal Reserve conducted the stress tests together with the Office of the Comptroller of the Currency and the Federal Deposit Insurance Corporation.

How did the stress tests work? They began with statistical models, devised by the regulatory agencies, that were intended to predict how firms' income, losses, and other financial characteristics might respond to changes in macroeconomic variables. By applying data provided by each participating BHC to the same model, the regulators could then compare results across firms and get a sense for how the financial system might fare.

The banks were evaluated under both a baseline macroeconomic scenario and a "more adverse" scenario for the following two years. The baseline scenario represented an average expected forecast of the real U.S. economy at the time. The "more adverse" scenario, meanwhile, imagined an even worse recession than 2007-09 — one with higher unemployment, higher inflation, and lower housing price

indices — believed to have approximately a 10 percent to 15 percent likelihood of occurring.

The SCAP found that 10 of the 19 participating institutions needed to raise their capital buffers by a collective amount of about $75 billion. To prevent any panic, the Department of Treasury created the Capital Assistance Program (CAP), which offered a way to assist BHCs if they could not raise private capital. As it turned out, however, not one firm utilized CAP. The 10 institutions that had failed the test raised the required capital on their own by November 2009, mainly by issuing common stock.

In the Wake of the Crisis

Federal Reserve Board Gov. Daniel Tarullo noted in a 2010 speech, in reference to the SCAP, that "effective responses to dire situations often require bold actions that would be unthinkable in calmer times." So it was with the stress tests, particularly 2009's trailblazing SCAP, which drew considerable controversy. The debate over how best to conduct stress tests still persists in the regulatory, academic, and banking communities today.

Disclosure of results has been one of the most controversial topics. The Fed Board released the SCAP's results in May 2009 with an unprecedented level of transparency, including firm-specific data. Why? As economist Til Schuermann, a partner at management consulting firm Oliver Wyman, summarized, "To regain credibility, supervisory authorities needed to disclose enough to allow the market to 'check the math.'" Many economists agree that the approach was appropriate in the midst of the crisis, back in 2009. But now that economic conditions and market confidence have improved, there's much debate over the transparency and disclosure of stress-test results in the future. The CCAR program in 2011 experimented with disclosing no results, while 2012's CCAR tried again to release the firm-specific data.

The main benefit to disclosure in 2009 was the credibility it established for the stress-test exercise. More generally, greater disclosure is usually associated with greater market discipline. That is, market participants will be able to make better decisions, and financial institutions might behave more appropriately, if stress-test results are disclosed to the public. Another benefit is that of "supervisory discipline," the idea that higher transparency will cause the regulators themselves to be held to higher standards of accountability since their work will be subject to public scrutiny.

Some question, however, whether these benefits outweigh the costs. Itay Goldstein, a professor of finance at the University of Pennsylvania's Wharton School of Business, and Haresh Sapra, a professor of accounting at the University of Chicago's Booth School of Business, recently presented a paper analyzing the costs and benefits of disclosure. They identified three major costs to disclosing the firm-specific stress-test results. First, they argued that disclosure may lead to "window dressing" within banks — that is, banks that know their stress-test results will be disclosed could be tempted to gather portfolios that will solely help them pass the test in the short run, but which might not be beneficial to stability in the long run. Second, they argued that people tend to place excessive weight on publicly disclosed information under certain conditions, with the result that disclosure could lead the market to overreact to stress-test results. Third, they argued that the Fed's disclosure of results decreases the private sector's incentives to produce its own information and trade on it, thereby limiting the government's ability to learn from the market.

Goldstein and Sapra proposed a sort of "median" compromise between full, firm-specific disclosure and no disclosure. They suggested disclosing only aggregate results, along with a description of each bank's risk exposures (without the complete stress-test verdict). They argued that "[aggregate] disclosure of stress test results will achieve the macro-prudential role of helping to stabilize the financial system as a whole," while the risk exposure description still keeps it difficult for banks to window-dress in order to pass the test, thus preserving some market discipline.

Another controversial aspect of the stress tests conducted by the Fed is whether they should have a microprudential or macroprudential orientation. A microprudential approach focuses on the solvency and capital levels of an individual bank, and evaluates each individual firm in isolation. This approach has historically been the norm for bank supervision, though many economists argue it was a reason why the regulatory framework before the financial crisis was deficient. On the other hand, a macroprudential approach focuses on the banking system overall, examining how the capital levels of banks are likely to hold up in response to a systemwide shock, where one bank may be affected by its exposure to problems at other banks. This approach aims to minimize the likelihood of distress for the whole banking system.

The SCAP, with the explicit goal of ensuring adequate capital across the banking system so as to boost confidence and facilitate lending, was mainly macroprudential in nature, another one of its trailblazing aspects. Yet it also had some microprudential elements, namely the firm-specific analysis. The question of how U.S. stress tests in the future should balance microprudential and macroprudential elements is up in the air.

As Tarullo noted, "I doubt that anything as ambitious as the SCAP would have been tried ... but for the exigencies of the financial crisis." Indeed, the financial crisis led regulators in the United States to turn previously untried, ambitious stress-testing concepts into actual policy.

Stress Tests Outside the Fed

The Fed isn't the only entity that carries out stress tests. For one, banks and other financial institutions regularly perform internal stress tests within their own risk management departments as a way to forecast the company's estimated losses and revenues under possible future economic scenarios. That raises the question: If banks were running their

own internal stress tests, why were they so wholly unprepared when the actual crisis began?

Andrew Haldane, the Bank of England's head of financial stability, explained in a 2009 speech that banks' internal stress tests had become far too easy. For starters, there was a principal-agent problem within the banks, a misalignment of incentives between risk managers and risk-takers. Haldane recalled that there was "absolutely no incentive for individuals or teams [within banks] to run severe stress tests and show these to management. ... If there were such a severe shock, they would very likely lose their bonus and possibly their jobs."

Haldane also suggested that banks' internal stress testing "was being used to manage regulation," and not necessarily to manage risk. He wryly suggested that banks' internal stress testing amounted to "regulatory camouflage."

The European stress-test experience may hold lessons for our own. As part of the European Union's response to the worldwide recession, the Committee of European Banking Supervisors (CEBS), the predecessor to the current European Banking Authority (EBA), conducted a round of stress tests in 2009 and 2010 across 20 countries in the European Union, with 91 banks participating. The attempts garnered a great deal of criticism from economists, however, for being too microprudential in nature and too easy on the banks.

The 2010 CEBS examination found that of the 91 banks tested, a total of seven banks needed to raise a mere 3.5 billion euros in capital, equivalent to roughly $4.3 billion at recent exchange rates. This figure was made to look even more questionable the following year, when Ireland performed a stress test of its own banks, all of which had been in CEBS' group of 91 banks and had passed. Ireland, however, found a total capital shortfall of a whopping 24 billion euros, and disclosed its full stress-test results and methodology, thereby earning far more credibility than CEBS had.

Perhaps in response to the Irish experience, the European Union's 2011 stress test, conducted by the EBA, increased its disclosure of methodology and results, almost reaching the high-water mark set by Ireland the previous year. The test itself didn't improve much in the way of credibility, however, according to some economists. After stress-testing 90 banks across the European Union, the EBA's final result was that a mere eight banks had a collective capital shortfall of 2.5 billion euros, yet again drawing criticism from economists for going too easy on the banks and for being too microprudential in nature.

Stressed Out About the Future

Stress tests appear to be a permanent part of the regulatory landscape. The Dodd-Frank Act mandates that the Fed conduct yearly stress tests on BHCs with at least $50 billion in assets. Furthermore, those financial institutions and select others with more than $10 billion in assets must also conduct annual or semi-annual internal stress tests (with the frequency depending on the type of firm), and submit a report on the results to the Fed. The Dodd-Frank stress tests will, like the SCAP, yield a quantitative result — a number representing the capital shortfall — as its main outcome, unlike 2011 or 2012's CCAR. Finally, from now until 2019, the United States will be phasing in new and more stringent capital requirements, based on international standards known as "Basel III." The capital requirements of Basel III are generally higher than the ones previously employed by U.S. regulators.

Beyond this, however, little is set in stone. The issue of macroprudential versus microprudential approaches in U.S. stress testing remains undetermined. As for the issue of transparency, the Dodd-Frank Act does not explicitly specify the extent of the disclosure of the results; it merely states that the Fed will publish a summary of the results. Goldstein, co-author of the cost-benefit analysis paper, says that there will certainly be some role for disclosure in stress tests in the future. After all, "If you don't disclose the results in any form, then the benefit from the tests is clearly limited." Still, Goldstein notes, "You want to treat it with some care. ... You want to be aware of the potential problems with disclosure and design disclosure to alleviate those problems."

The stress tests of the past few years seem to have yielded some success in fostering market confidence, while provoking many questions. With the Dodd-Frank Act's annual stress test requirement, perhaps the next few years will see some of those questions answered. **RF**

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New Laws Protect Social Media Privacy

BY KARL RHODES

Robert Collins, a supply officer with the Maryland Department of Public Safety and Correctional Services, returned to his job in 2010 after taking a leave of absence. While he was gone, the department implemented a policy requiring employees returning from leave to divulge their Facebook user names and passwords as part of background checks to screen out people with gang affiliations. During Collins' recertification process, an interviewer logged on to Collins' Facebook account and browsed through his password-protected postings.

Collins believed the department had invaded his privacy, so he contacted the American Civil Liberties Union. Deborah Jeon, legal director of the ACLU of Maryland, wrote a letter to the agency contending that the policy violated the federal Stored Communications Act. The department voluntarily modified its practices somewhat, but state Sen. Ronald Young introduced legislation to prevent public and private employers in Maryland from requiring employees or job applicants to divulge user names and passwords for personal accounts. (Federal government employers are exempt.) Young also introduced legislation that would block colleges and universities from requiring students or prospective students to provide access to their personal accounts. The schools bill died, but the employer bill passed and took effect in October 2012.

Maryland was the first state in the nation to pass such a law, and Collins' experience has generated much discussion about social media monitoring by employers. Bradley Shear, an attorney in Bethesda, Md., helped Young's staff write the legislation. He says the new law is a "win-win" that protects employees' privacy while shielding employers from liability issues that could arise from social media monitoring.

Erin Egan, Facebook's chief privacy officer, offers the following example: "If an employer sees on Facebook that someone is a member of a protected group (for instance, over a certain age), that employer may open themselves up to claims of discrimination if they don't hire that person." Egan also says that an employer might become liable for failing to protect personal information gleaned from Facebook or for failing to report such information to law enforcement authorities if it suggests criminal activity.

One might assume that employers would prefer to weigh the risks and rewards of social media monitoring without government regulation, but employer advocacy groups have been mostly absent from the public policy discussion over password privacy. "We don't have a formal position on it," says Kate Kennedy, a spokeswoman for the Society for Human Resource Management.

University officials, however, are more open about their social media struggles. The University of North Carolina at Chapel Hill, for example, implemented a monitoring policy partly in response to an NCAA investigation that resulted in serious sanctions against the university's football program. The investigation may have been prompted by tweets by a UNC football player that suggested he may have been receiving gifts from a professional sports agent.

In a public infractions report released in March 2012, the NCAA enforcement staff "alleged a failure to monitor because the institution did not 'consistently' monitor the social networking activity of its student-athletes." The report added that "the social networking site of student-athlete 5 contained information that, if observed, would have alerted the institution to some of the violations."

In 2010, the university started requiring all its student-athletes to allow a coach or an administrator to follow their public posts on Facebook and Twitter, according to Steve Kirschner, UNC's director of sports information. The university has since modified that policy to require student-athletes to register their social media accounts with Varsity Monitor, a contractor that notifies the university when it observes questionable content. Kirschner emphasizes, however, that UNC does not demand access to password-protected content. "We just want to make sure that our student-athletes are representing themselves and their university to the public in appropriate ways," he says.

"It's one thing if it's out there on the Internet for everyone to see," says Shear, the Maryland attorney. But when content is protected from public access, "that's when it should be off limits." Much of Collins' Facebook content, for example, was visible only to people whom he designated.

According to a nationwide survey commissioned by the job-search website CareerBuilder, 37 percent of companies use social networking sites to screen job candidates, and another 11 percent plan to do so. But media reports suggest that only a few employers have required candidates to divulge user names and passwords, and some of those employers say they have abandoned the practice. Even so, three states have passed laws similar to Maryland's, and legislation is pending in 10 additional states. Shear has helped draft a national bill as well. U.S. Representatives Eliot Engel and Jan Schakowsky introduced the Social Networking Online Protection Act (SNOPA) in April 2012.

Collins got his job back with Maryland's Department of Public Safety and Correctional Services, but he left in 2011 to attend nursing school. He understands the importance of screening out people with gang affiliations when hiring correctional officers. But, he adds, "There's a fine line between making sure that the officers are not involved in illicit activity and invading someone's privacy. As officers, we do not forfeit our civil rights." **RF**

JargonAlert

Operation Twist

BY TIM SABLIK

In June, the Federal Open Market Committee voted to extend "Operation Twist," its program of selling short-term Treasury securities and purchasing long-term Treasuries, through the end of 2012. The Fed will sell a total of $667 billion of short-term bonds (nearly all of its short-term holdings) and purchase an equivalent amount of Treasuries with maturities of between six and 30 years with the goal of lowering long-term interest rates. (In December 2012, the FOMC voted to purchase long-term Treasuries at a pace of $45 billion per month and continue purchasing $40 billion of mortgaged-backed securities a month to further drive down long-term interest rates.)

The Fed is able to influence short-term interest rates by changing its target for the federal funds rate, the interest rate that banks charge one another to borrow money overnight. Other short-term interest rates tend to track the federal funds rate. The Fed has targeted a federal funds rate of near zero percent since December 2008 in an effort to boost recovery from the recent recession. It does not have a way of directly targeting long-term interest rates, however, which is why it has employed Operation Twist.

By buying long-term Treasuries, the Fed can reduce their supply in the market, raising their price. The interest rate of a security has an inverse relationship to its price. If you purchase a Treasury for $100 today and you receive $105 when you redeem it in one year, then the interest rate on the investment is 5 percent. If the price today goes up to $102 because supply is low, then the interest rate falls to about 3 percent.

Operation Twist would ordinarily have the opposite effect on short-term interest rates. By selling its holdings of short-term Treasuries, the Fed increases their supply, lowering their price today and raising their interest rates. If you plot the interest rates according to the bond's time to maturity — the so-called "yield curve" — you get a curve that slopes up quickly, then flattens out. The hoped-for effect of Operation Twist on this curve is how the operation got its name: The yield curve is "twisted" when short-term rates are pushed up and long-term rates are pushed down. Since the Fed has committed to keeping the federal funds rate near zero until labor market conditions improve, however, it is unlikely that short-term rates will rise in response to this action, allowing the Fed to target lower long-term rates while maintaining short-term rates.

But "Operation Twist" is also a double entendre; it owes its name in part to the era in which it was first employed. In 1961, the twist dance craze was sweeping America at the same time that the incoming Kennedy administration was facing a weak economy. At the time, the dollar was still tied to gold, and President Kennedy's administration was worried about gold outflows. Kennedy wanted a way to promote growth through monetary policy without lowering short-term interest rates, which would have encouraged investors to convert more dollars into gold rather than hold them in short-term bonds.

The Fed announced a plan to sell short-term Treasuries and buy long-term bonds; at the same time, the Treasury reduced its issuance of long-term securities and increased the number of short-term securities. Originally referred to as Operation Nudge because of its intended goal of nudging long-term rates lower while maintaining or elevating short-term rates, it was renamed Operation Twist in homage to the song Chubby Checker popularized.

Today, the Fed finds itself in a somewhat similar position. It wants to stimulate growth but is constrained from lowering short-term rates because, in this case, they cannot go any lower. Through its quantitative easing operations, the Fed seeks to lower long-term rates by purchasing long-term securities with newly created reserves. This effectively increases the money supply and has led some critics to voice concerns that such actions could lead to inflation in the future. In contrast, Operation Twist is balance sheet neutral, as the Fed pays for the long-term bonds by selling its holdings of short-term bonds.

Early research on the 1961 Operation Twist suggested that it had minimal impact. More recently, however, a 2011 study by Eric Swanson at the San Francisco Fed found that the move caused long-term interest rates to fall by about 0.15 percentage point, equivalent to the expected response to a surprise 1-percentage-point cut in short-term rates.

It's possible that today's Operation Twist will have similar results, though there is at least one reason it may not. James Hamilton of the University of California, San Diego, noted on the Econbrowser blog that while the Treasury Department in 1961 reinforced the supply actions the Fed was trying to achieve, today's Treasury has increased its issuance of long-term securities. This may partly offset the current Operation Twist, leading Hamilton to be pessimistic about its lasting effects. Long-term yields on Treasuries have fallen since the start of Operation Twist, but it is difficult to separate the impact of the Fed's actions from other market influences. **RF**

ILLUSTRATION: TIMOTHY COOK

Technology, Unionization, and Income Inequality

BY SETH RUBINSTEIN

During roughly the first half of the 20th century, union membership in the United States consistently rose. In 1900, only 7 percent of the U.S. labor force was in a union, but by 1955, that figure had risen to 32 percent. In roughly the second half of the century, it consistently declined, falling to less than 15 percent by the end of the century. When graphed, this union membership pattern resembles a ∩-shaped, or concave, function.

Meanwhile, during that same period, income inequality in America experienced the opposite trajectory, declining through the first half of the 20th century and rising through the second half. The wealthiest decile of Americans earned 41 percent of income around the beginning of the century; following a ∪-shaped, or convex, pattern, that number declined to a low of 31 percent in the middle of the century, and rose back up to 41 percent by 2000.

Economists Emin Dinlersoz of the U.S. Census Bureau and Jeremy Greenwood of the University of Pennsylvania investigate these trends in a recent paper. Their questions: What caused the ∩-shaped pattern in union membership and the ∪-shaped pattern in income inequality over the 20th century in the United States? And are the two phenomena related?

"The Rise and Fall of Unions in the U.S." Emin M. Dinlersoz and Jeremy Greenwood. National Bureau of Economic Research Working Paper No. 18079, May 2012.

Dinlersoz and Greenwood hypothesize that skill-biased technological change is the driving force behind both de-unionization and income inequality. In other words, they set out to determine whether technological developments that favor skilled laborers over less-skilled ones can explain declining union membership and rising income inequality. The authors explore the topic in three ways: (1) economic history, (2) a developed model, and (3) statistical tests on empirical data. After building an intuitive grasp of the story from the historical perspective, they ultimately find their hypothesis supported by the data.

Historical context offers an intuitive explanation for these trends. As the early 1900s brought the assembly line, the relative productivity of unskilled laborers increased. With that came greater unionization and lower income inequality. Roughly the second half of the century, however, saw the reversal of this trend. With the advent of more sophisticated and inexpensive automation, eventually including computers, the work of many less skilled laborers could be outright replaced by machines. Skilled laborers were needed to work with the new, sophisticated technology. With these developments came less unionization (because of lower demand for less skilled laborers, displaced by machines) and more income inequality (because only those with training that equipped them to work with new technology could really benefit from the new skill-biased technological developments.)

With this economic history in mind, Dinlersoz and Greenwood build a model of unionization to see if, in fact, the variable of skill-biased technological change can explain the ∩- and ∪-shaped phenomena. Their model assumes that unions value two things: maximizing wages for union members, and maximizing the number of firms organized with unions. Importantly, however, that generally entails a trade-off between the two goals. Through simulations, the authors find that the model supports their hypothesis that skill-biased technological change is associated with de-unionization and rising income inequality.

The authors go on to examine whether the empirical evidence supports their model. They look at two factors. One is whether skill-biased technological change and the skilled to less-skilled labor ratio are positively correlated — that is, whether an increase in one is associated with an increase in the other. The second is whether skill-biased technological change and the unionized share of the workforce are negatively correlated. If both of these correlations are borne out in the data, that would support their hypothesis.

To measure skill-biased technological change, Dinlersoz and Greenwood look to the relative prices of new capital goods. Specifically, they use a database of prices over time taken from the work of economists Jason Cummins, now at Brevan Howard Asset Management, and Giovanni Violante of New York University, who in 2002 calculated quality-adjusted relative prices of new capital goods in equipment and software. "The idea is that technological progress is embodied in the form of new capital goods. Technological progress in the capital goods sector is reflected by a declining relative price for investment," Dinlersoz and Greenwood write. "Industries where the price of the capital inputs drops the quickest should experience the fastest pace for skill-biased technological change."

The data, it turns out, support the hypothesis that skill biased technological change can be a force behind de-unionization and increased income inequality. With income inequality generally rising and technology becoming ever more sophisticated and important to the economy, better understanding these relationships could help the United States prepare for labor trends on the horizon. **RF**

A Wallet in Every Phone

Will mobile payments take off in the United States?

BY TIM SABLIK

In 2007, Visa released a commercial with a line of customers winding smoothly through a crowded café. As beaming workers served drinks and sandwiches to a clockwork beat, each customer stepped up to the cash register, swiped a Visa card, and was quickly on his way. The rhythmic flow ground to a halt, however, when one man approached the counter and sheepishly reached for his wallet to pay in cash. The cashier glared at him as she opened the register and counted out the man's change while everyone else in the café looked on impatiently. The ad's message was not subtle: Cash is passé.

In a few years, the same scene may be filmed with cards as the villain and the mobile phone as the hero. Already, when you walk into a Starbucks for your caffeine fix, you can pay by scanning a barcode displayed on your smartphone via the company's mobile application (app). And soon you might not need to reach for anything at all. The phone in your pocket will detect that you've entered the coffee shop and immediately add your name and picture to the cashier's register. After you've ordered, you'll just give your name to the cashier, who will match your face with your picture to verify your identity; the order will then be charged to an account linked to your phone. As you head out the door, you will be able to check the digital receipt sent straight to your mobile wallet.

This is the sort of future envisioned by Square Inc., one of many recent mobile payments startups. Square's app can also process payments using bar codes similar to those used by Starbucks. In fact, customers of the java giant can now pay with Square thanks to a partnership between the two companies. Google is another newcomer to the payments sector, having launched a mobile wallet on its Android operating system for mobile devices in 2011. PayPal, which found earlier success as a payment service for online transactions, is now accepted as a payment method at physical stores like Home Depot and has a mobile app that allows users to send money to anyone's email address or mobile phone number. Most recently, 14 merchants, including Wal-Mart and Best Buy, banded together to develop their own mobile payments network. The merchants hope to draw consumers into their payment system by offering targeted incentives and rewards through the same devices customers use to pay. Major card networks don't intend to be left out of mobile payments either; Visa showcased its mobile payment services at the London 2012 Olympics by setting up thousands of mobile payment terminals to accept payments from smartphones distributed to athletes.

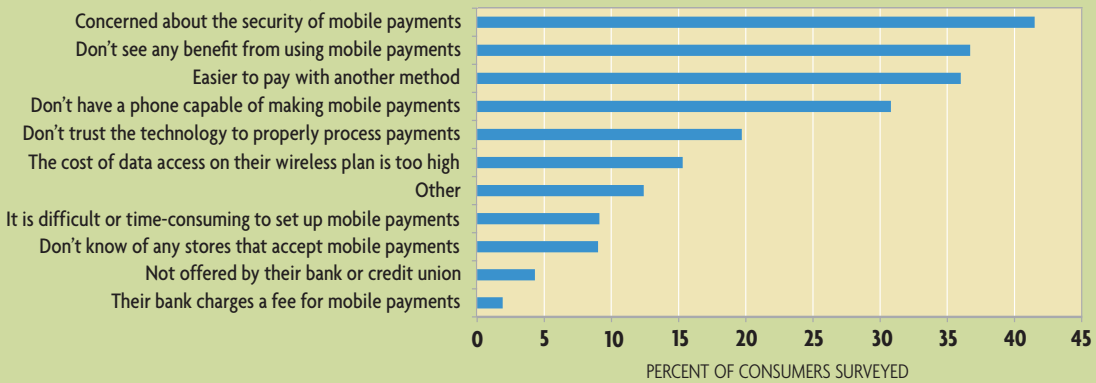
Will Americans Want to Make Mobile Payments?

According to a survey released in March 2012 by the Federal Reserve Board of Governors, only 25 percent of consumers expressed interest in using their mobile phones as a payment device at the point of sale. The number-one reason survey respondents gave for not using mobile payments was that they were concerned about the security of the technology (see chart). Still, financial institutions, technology firms, and merchants are betting that consumers will overcome their worries and learn to love mobile payments. Are they right?

There is reason to believe mobile payments could catch on. According to the Pew Research Center, mobile phone ownership among American adults has been trending upward steadily, from 73 percent in 2006 to 88 percent in 2012. Nearly half of adults in the United States owned smartphones in February 2012, more than those who owned basic mobile phones (which can only make phone calls and send text messages). As users rely on their smartphones for an increasing number of functions, established payment networks and startups alike are hoping to add the wallet to that list.

There are already signs of a growing interest in alternative payment solutions in the United States. Prepaid debit card payments were the fastest-growing noncash payment method in a recent Fed payments study, with the number of transactions increasing by 21.5 percent

Concerns About Mobile Payments



SOURCE: Federal Reserve System Board of Governors

per year from 2006 to 2009. The value of prepaid card payments likewise grew 22.9 percent per year in the same period. Nonbank institutions such as PayPal allow customers to deposit money into a prepaid account to make purchases or transfer money to other users. According to PayPal's parent company, eBay Inc., PayPal had 113.2 million registered accounts as of July, a 13 percent increase from the previous year; eBay's president and CEO, John Donahoe, predicted mobile transactions would reach a volume of $10 billion in 2012.

Customers in Nairobi, Kenya, visit one of the more than 37,000 M-PESA agents in the country.

Convenience is one of the often-cited benefits of mobile payments. In a survey of literature on mobile payments, Fumiko Hayashi of the Kansas City Fed reported that consumer surveys point to convenience as a major determinant of payment choice. Consumers with smartphones that are equipped with Near Field Communication (NFC) chips can make payments simply by waving the phone over a payment terminal. In the case of Visa's NFC payments at the Olympics, small purchases required no further authorization, speeding up the time it takes to buy a drink or a quick bite to eat.

In other countries, speed and ease of use have contributed to the success of mobile money. Japan's population began using mobile phones in 2004 to make contactless payments at vending machines and train stations; using it to pay for other goods and services was a natural extension.

Mobile Payments and the Unbanked

Kenya enjoys the distinction of being a world leader in mobile payments due to the huge success of M-PESA, a service that allows users to send and receive money by text message without a bank. In Kenya's case, mobile payments developed to fill a gap in traditional banking services.

"There was a definite unmet need," says William Jack, an economist at Georgetown University who has studied M-PESA. "Kenya is a society in which families are often split up geographically. Sending money home used to mean literally getting on a minibus and transporting the money, which was fraught with costs. M-PESA virtually eliminated all of those costs. It made sending money home much easier, more affordable, and more convenient."

Since mobile provider Safaricom established M-PESA in 2007, about a third of Kenyans have opened accounts with the service. Users can deposit money in their mobile account through any of Safaricom's thousands of agents and then transfer credit from their account to anyone with a Safaricom number via text message. The recipient can then visit any nearby agent to cash out the credit to his account. In many ways, the Safaricom network mimics ATMs in the United States. The ease and convenience of being able to send money around the country instantly and securely was a large contributor to M-PESA's success. But there was another benefit, as well: open access to banking services.

"Five or six years ago, if you went into a bank as a person in the bottom of the income distribution here, you had basically no chance of opening a bank account," says Jack. "But as long as you've got a Safaricom number and your national ID, which everyone has, you can have an M-PESA account in literally three minutes. M-PESA was not necessarily focused on poor people, but it was certainly made available to them."

M-PESA has found support both among the banked and unbanked in Kenya, but its success in reaching a segment of the population that was previously outside of the financial system is what has brought it widespread attention. Although the value of transactions traveling through M-PESA is lower than the value of those processed in Kenya's banking sector, the volume is much higher, suggesting that there is substantial demand for basic banking services even among those with little money.

The success of mobile payments in Kenya suggests the possibility of a similarly untapped market here in the United States. According to a 2011 survey by the Federal Deposit Insurance Corporation, 8.2 percent of American households, amounting to about 10 million households, had no checking or savings account and were therefore considered unbanked. Another 20.1 percent, or 24 million households, were designated as underbanked — that is, they had a bank account, but had used an alternative financial service, such as a check-cashing service or payday loan provider, at least once per year.

In the Board of Governors survey, the primary reason the unbanked gave for not having a checking account was that they disliked dealing with banks, a sentiment likely exacerbated by the fallout from the recent financial crisis. The underbanked said that the main reason they used payday loans was that they felt they couldn't qualify for a bank loan or credit card. Although on a smaller scale, distrust of banks among the American unbanked mirrors the distrust of banks expressed by poorer Kenyans. Also similar to

PHOTOGRAPHY: ASSOCIATED PRESS

M-PESA users in Kenya, unbanked and underbanked individuals in the United States have high rates of cellphone ownership. Among the unbanked, 64 percent have access to a mobile phone and 18 percent to a smartphone. Among the underbanked, the percentages are even higher: Ninety-one percent have access to a mobile phone and 57 percent to a smartphone. There is also evidence from the survey that minority or underserved groups are already adopting mobile payments at a higher rate than the populace at large. Hispanics counted for 21 percent of mobile payment users in the survey but only 13 percent of mobile phone owners.

Elisa Tavilla, a payments specialist at the Boston Fed, suggests in a working paper that the unbanked or underbanked could use mobile prepaid accounts to automatically deposit payroll checks and make purchases and cash transfers, "avoiding or reducing expensive check cashing services, ATM fees, and other charges."

Getting Information Back

Mobile technology also opens up new avenues of communication between consumers, merchants, and financial service providers. According to the Board of Governors survey, a third of mobile banking users receive text message alerts from their banks, and two-thirds of those users receive low-balance alerts (see chart). These alerts are just one example of mobile technology's ability to provide instant access to financial information for both banked and unbanked consumers, enabling more informed decisionmaking.

"If I am underserved and I don't use a regular bank account frequently, before I make a purchase I can check my balance to see if I have enough money there so I don't overdraw my account," explains Marianne Crowe, vice president of the payment strategies group at the Boston Fed. "I can set up alerts if I am linked to a bank or even a third-party provider to give me a warning if I go below a certain amount. There are a lot of tools and pieces of information that can help an underserved consumer manage their financial information through the phone."

The demand for such tools, both from the unbanked and from consumers in general, is real. While credit card use declined between 2006 and 2009, dropping 0.2 percent per year, debit card payments grew at 14.8 percent per year — in part, it seems, because debit cards allow easier monitoring by the consumer. Hayashi at the Kansas City Fed points to surveys which show that the ability to monitor finances and control spending is the primary reason consumers give for using debit cards to make purchases. Debit cards without overdraft protection provide immediate feedback when a consumer tries to spend more money than he has in his account, as the payment will be declined. Mobile devices, likewise, can provide access to complete account information at the point of sale, allowing consumers with limited resources to make more informed decisions.

Mobile payment providers, whether banks, merchants, or carriers, are also interested in the smartphone's ability to access and provide information. The Boston Fed's Crowe says consumers other than the unbanked won't be interested in adopting mobile payments if they simply represent another way to make a purchase at the point of sale. Unlike developing nations like Kenya, the United States already has a widely adopted banking and payment network to meet most consumers' needs.

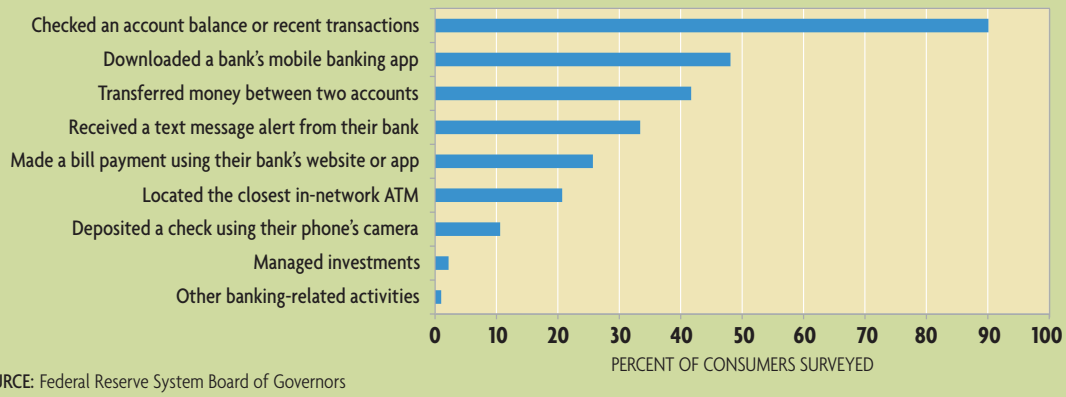
"Industry participants across the board are looking at the value-added services they can provide to incent consumers to use their phone for payments," says Crowe. For merchants, those services include offering coupons and discounts that, coupled with GPS technology in smartphones, can detect when consumers are near the store and make offers based on their shopping history. Even nonmerchants see the benefit of integrating product search and information with payments; Google views its efforts to build a mobile wallet as a natural final piece of its search engine, as it "closes the loop" between searching for items and purchasing them, says Hal Varian, chief economist at Google.

Randy Vanderhoof, executive director of the Smart Card Alliance, a nonprofit industry group that promotes payment methods based on smart card technology, says that merchants see many more benefits from mobile phones as payment devices compared to cards as a result of this ability to interact with the consumer.

"The merchants can have kiosks set up at the entry to the building, and as someone walks in, they tap their phone on the kiosk and it registers them into the store. They can then be given offers or notices about specials," says Vanderhoof.

Although services like these could increase convenience for shoppers, they do raise concerns about privacy. With physical store club cards, shoppers opt in to the program by signing up for the cards and using them at the checkout line. Thus far, mobile apps have

Consumer Use of Mobile Phones for Banking



SOURCE: Federal Reserve System Board of Governors

also taken an opt-in approach, but Crowe notes that formal standards may be necessary to ensure consumers are aware of their options.

"Different agencies in Washington and elsewhere are concerned about the privacy factor, and probably somewhere down the road we need to develop standards and requirements so that the consumer not only knows they have the right to opt in to receive these incentives, but also understands that they're sharing information with the merchant or provider to get these discounts," says Crowe.

Safeguarding Mobile Money

Developers of mobile payment technology have argued that it offers better security than current card-based payment options. For any substantial purchases, mobile payments offer what is known as two-factor authentication: That is, the user must have both the physical phone and also possess some other piece of security knowledge, usually a PIN or password, to authorize the purchase. Cards also offer this security, in theory, by requiring the user to sign for a transaction as well as possess the card, but the signature is much harder to authenticate at the point of sale. Additionally, online transactions using cards require only knowledge of information on the card itself, which is static. Mobile transactions can take advantage of dynamic authentication, in which data unique to a transaction is used to verify the payment and cannot be used to make other purchases. Nevertheless, some security breaches may be inevitable as the technology gets off the ground.

"While technologies that promise real solutions for securing mobile acceptance are quickly evolving, a number of security risks remain," says Troy Leach, chief standards architect with the PCI Security Standards Council, a consortium of payment brands involved in establishing security standards for mobile payments. "In the midst of growing deployment of mobile technologies in payments, worries over security may potentially be a barrier to adoption."

In February, engineers exposed a way to break the PIN encryption in the mobile wallet built into Google's Android software. Google quickly responded by fixing the security hole and also added new security-related features, such as the ability to disable the mobile wallet remotely from any computer. In addition, consumers can contact the issuers of the cards linked into their mobile wallet to block the accounts, as they would if the physical cards were stolen. Google also notes that payment information is stored on its own secure servers, rather than the phone itself, protecting it if the phone is stolen.

"It's hard to judge the industry on whether or not it's secure until we actually get more devices into the hands of consumers and they start using it more frequently," says Smart Card's Vanderhoof. "Security is a moving target, and as products enter the market, people with motivations to find weaknesses in them will find weaknesses, and the brands and issuers will have to adjust accordingly over time."

Vanderhoof and others advocate vigilance, but not at the cost of slowing development of the technology. Although no national security standards have been established for mobile payments, most industry participants are used to heavy scrutiny from customers and regulators.

"The payments industry is a heavily regulated marketplace, so they are all well aware of the responsibilities they have to protect data," says Vanderhoof.

Regulators are also watching the market and assessing what consumer protection laws extend to mobile transactions. For mobile wallets such as Google's that are funded through consumer bank accounts, the behind-the-scenes infrastructure is largely the same as the one currently used for processing card payments and electronic transactions. The Fed's Regulation E covers electronic fund transfers (ETFs) to and from accounts at financial institutions. This includes ATM and debit card transactions, direct deposits and withdrawals, and online bill payments. Through Regulation E, consumers are only liable for $50 of unauthorized ETFs if they notify their financial institution within two days of learning about the breach in their account. Similar consumer protections for credit transactions are covered under Regulation Z.

The Fed has indicated that payments are covered by these provisions when consumers use their phones to access linked debit and credit accounts.

"In the 'back end' bank-to-bank settlement of these payments, the funds will typically travel on existing payment 'rails,' such as the automated clearinghouse system or a card network," Stephanie Martin, associate general counsel of the Board of Governors, told the U.S. House Committee on Financial Services at a hearing on mobile payments in June. "The settlements between bank accounts over these existing systems are subject to the statutes, rules, or procedures that are already in place."

The larger regulatory question is whether those same rules apply to nonbank entities providing mobile banking services. For example, PayPal allows users to deposit money. It also offers a form of credit through its Bill Me Later feature, which allows users to pay for items at a later date. But since PayPal is not a bank, it is not necessarily subject to the same regulations that govern financial institutions. According to a review of mobile payments by attorneys Timothy McTaggart and David Freese of the law firm Pepper Hamilton LLP, PayPal states in its user agreement that it complies with the provisions of Regulation E. In fact, PayPal users are not liable for any amount of unauthorized transactions (subject to eligibility requirements) if they notify the company within 60 days of the event.

Vanderhoof notes that PayPal must follow the rules in place governing automated clearing house (ACH) transactions, since its transactions still use traditional payment rails. But as mobile payment startups move further from traditional banking infrastructure, the regulatory guidelines become even blurrier. Such is the case with direct carrier billers, which handle payments by charging the consumer's mobile phone bill. In her congressional testimony,

Martin suggested that this was an area where the Federal Communications Commission might have authority, but it is difficult to point to one set of rules that cover these types of mobile payments.

"The general consensus is that, yes, things are covered, but there's no one place that lays out how you are protected in all of these cases," says the Boston Fed's Crowe. If a customer has a dispute over charges on his phone bill, such as fraudulent purchases made through direct carrier billing, those disputes are resolved according to the terms and conditions established by the provider, which are not consistent across the board, says Crowe.

"Are the mobile phone carriers as well-equipped as banks to handle customers service issues? I don't know, but they probably handle things differently. That's a risk. Some people say that the phone companies are extending credit to customers by allowing them to do this, therefore they should be regulated the way banks are," says Crowe.

For now, Crowe notes that this type of mobile payment is limited in the United States to low-dollar transactions, such as purchasing a ringtone or mobile apps. In that sense, the risks of payment disputes are lower. But others argue that the volume of these transactions is growing. When an earthquake devastated Haiti in early 2010, the Red Cross established a number that people could text to donate $10 to relief efforts, which would be charged to the customer's phone bill. The campaign raised more than $20 million, representing a substantial extension of credit from phone carriers on behalf of their subscribers.

"If carriers and their intermediaries decide to start letting people bill their mobile phones for much larger, more expensive purchases, then I do think that is something that would require more scrutiny in terms of how that impacts consumers from a risk perspective," says Crowe.

For the time being, Crowe and Vanderhoof both advocate that regulators pay close attention to developments in the market, but also take a wait-and-see approach to implementing new regulation. Jack notes that in Kenya M-PESA flourished in part because the government remained relatively hands-off during its development. While he cautions that this lesson should not be applied too broadly, regulators and legislators alike in this country have recognized the importance of allowing industry solutions to develop naturally.

The Evolution of the Wallet

Although a hands-off approach to regulating mobile payments is likely to result in greater innovation, that increased activity could also hinder widespread adoption of the technology. Each new entrant into the marketplace may seek to control its relationship with its customers by using its own proprietary payment system, creating compatibility problems. Unlike in Kenya, where Safaricom already had a dominant position in the telecom market, there is no similarly dominant provider in the U.S. mobile market, and conflicting standards of payment set up by competing merchants, card networks, banks, mobile providers, and third-party startups could serve to confuse consumers and delay their acceptance of mobile payments.

Vanderhoof believes that the mobile payment market is likely to coalesce around a few key players chosen by the consumers. Startups will have a difficult time competing against the marketing clout of established brands as well as the trust those companies have built with consumers in existing payment relationships. On the other hand, it is difficult to predict how the market will take shape.

"It's really kind of early to figure out who the winners and losers are going to be," says Vanderhoof. "I think there's going to be a lot of experimentation over the next few years, and we're probably going to see many names that we haven't seen before."

Crowe says the payment strategies group at the Fed will be following developments in the market closely to learn about any potential risks to the payment system. She says that other regulators and government groups are also active in tracking the industry. There is no consensus on which mobile payments offerings will emerge as the market leaders or when paying by phone will become common for shoppers, but most payments experts agree that mobile payments are coming. Jack says the biggest lesson the United States can learn from Kenya's experience is that demand will drive development.

"We asked people in a survey, 'What would be the effect of banning M-PESA?' And 99 percent of people said disastrous or very bad," says Jack. "So you've got to produce something that people really love and for which there is this high demand, this really great need. In the U.S. context, find where that need is, address that need, and address it simply." **RF**

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JOURNEY TO WORK

EUROPEAN MODEL COMBINES EDUCATION WITH **VOCATION**

BY BETTY JOYCE NASH

Cameron Friday has always been a hands-on learner. He liked math better than English, studied auto mechanics and drafting in high school, and figured he would study engineering in college. But as a high school senior, he discovered another choice: Apprenticeship 2000, run by eight manufacturing firms in the Charlotte, N.C., area. It's based on a European training model that combines full-time work with school.

He reconsidered his options. "The thing about engineers is they sit at a desk all day, but I like building things and watching them come together," he says. He decided to try for the machinist apprenticeship. It wasn't easy: Besides good grades, references, and a high score on a mechanical aptitude test, he needed to perform well in an exercise that required him to assemble an object from a box of parts, hand-filing them to highly exact measurements. From the original 100 students who expressed interest, only 20, including Friday, made Apprenticeship 2000's final cut.

For half a century, education policy in the United States has emphasized college in the belief that general education best prepares workers for stable, well-paying jobs over a lifetime. In Europe, many students instead go into a highly developed and systematized form of vocational education, which aligns learning with business and industry, and smoothes young peoples' entry to the workplace.

Since the 2007-2009 recession, vocational education has gotten more attention, especially as college costs rise, student loans mount, graduation rates stagnate, and the labor market disappoints. Might viable post-high school career paths now start in the stigmatized classrooms of what is called "career and technical education?"

Europe's Dual System

Germany and Switzerland educate roughly 53 percent and 66 percent of students, respectively, in a system that combines apprenticeships with classroom education — the dual system. This approach brings young people into the labor force more quickly and easily. Unemployment for those in Switzerland between the ages of 15 and 24 in 2011 was 7.7 percent; in Germany, 8.5 percent. In the United States that year, the rate was 17.3 percent, down from 18.4 percent the previous year. (A 10 percent higher rate of participation in vocational education in selected Organization for Economic Cooperation and Development countries led to a 2 percent lower youth unemployment rate in 2011, according to economist Eric Hanushek of Stanford University.)

The dual system produces other economic benefits, according to Stefan C. Wolter of the University of Bern and Paul Ryan of Cambridge University in an article in the *Handbook of the Economics of Education*. These pluses include the cognitive and motivational effects of combining book learning with work, a closer match between the requirements of the job and lesson content, better school-to-work transitions, and an opportunity for employers to assess potential future employees.

The Swiss and German systems are widely cited as successful bridges to several hundred occupations. At ages 15 to 16, in Switzerland, about two-thirds of every cohort enter apprenticeships, Wolter notes. Apprentices in fields from health care to hairdressing to engineering attend vocational school at least one day a week for general education and theoretical grounding for roughly three years. On other days, they apprentice under the supervision of a seasoned employee.

What makes the system work so well is firm participation, which is relatively strong. "If you exclude the one-person companies and the businesses that cannot train, about 40 percent of companies that could train do train," Wolter says.

Apprentice spots are competitive. "We look specifically for young people with a high degree of motivation to learn, commitment, respect, and flexibility — in mental and geographical terms — and openness," says Natalie Hamela, a spokeswoman for the apprentice program at Swisscom, a telecommunications firm.

Swisscom offers roughly 250 apprentice slots annually and chooses from an applicant pool of about 8,000. The firm hires about half of its graduating apprentices, but those in the other half, Hamela says, "are surely employable. We train our apprentices for the employment market, not just for Swisscom."

Student-apprentices create applications for smartphones, organize events, write articles or produce films for company media, or consult with customers.

Another option for students, if they can't get an apprenticeship, is full-time vocational school. Either way, there's a path for those who don't make it — or don't want to make it — into a university for a general education.

In Germany, about 25 percent of students go to university, and apprenticeships employ another 53 percent. At 16, they sign on for a three-year stint in one of 350 occupations. Another 15 percent may attend vocational schools. Those

who are less qualified take a full-time vocational course or temporary job until they land an apprenticeship. About one-quarter of German employers participate.

The apprentice system is enabled in part by cooperation between employers and unions and by strong secondary education systems. Students in Switzerland and Germany outscore world averages on the Program for International Student Assessment, or PISA, which assesses 15-year-olds across countries in math, science, and literacy.

Participating students also don't have to worry about losing any status. In Switzerland and Germany, parallel training in school and on the job is considered nearly as prestigious as a university track, according to Nancy Hoffman, author of *Schooling in the Workplace* and vice president of the Boston-based nonprofit Jobs for the Future. Apprenticeship seekers there include many who, in the United States, might attend a university.

John Stutts, 19, files a spare part for a computer controlled milling machine at Blum Inc. He is in his third apprenticeship year.

Other western European countries use variations of the Swiss and German model. Belgium, Finland, Sweden, and the Netherlands train most vocational students in school programs, while Germany, Switzerland, Austria, and Denmark have large school-and-work programs.

The United States is an outlier: By international standards and official definitions, it has virtually no vocational education and training program. But the learning-by-doing mentality may be spreading in the United States, especially in advanced manufacturing, where firms need highly skilled workers. European subsidiaries such as Daimler, Volkswagen, Stihl, Siemens, Blum, and others struggle to find them. Apprenticeship coordinator Thomas Kuehne, of Virginia Beach, Va.-based Stihl Inc., says, "We took the dual system and shaped it to fit our own needs."

Apprenticeship American Style

In the United States, vocational education has been disparaged by some as a place for students perceived as unwilling or unable. The United States still largely champions college as the route to higher lifetime wages and the flexibility to retool skills in times of economic change. Yet just 58 percent of the 53 percent of college-goers in 2004 who started at four-year institutions finished within six years. Moreover, 25 percent of those who enter two-year community colleges don't finish. Only about 28 percent of U.S. adults over age 25 actually have a bachelor's. What about the rest? What's their path to the workplace? It may be unrealistic to expect everyone to finish college, but most students will need more than a high school education as jobs become more complex.

For the future workplace, students need skills that can't be easily automated and outsourced: technical know-how, interpersonal skills, and adaptability, according to David Autor of the Massachusetts Institute of Technology.

"Many traditional jobs that employed high-school and some-college workers are in decline," he says. In 1973, 72 percent of jobs required only a high school diploma or even less education, compared to about 40 percent of jobs today. Those jobs will keep shrinking in number.

The factory jobs of today, for example, require multi-discipline engineering skills — software, mechanical, electronic, systems. One company that finds itself challenged to find people with those skills is Siemens Energy, a U.S. subsidiary of the German conglomerate Siemens. The company needs these "mechatronics" technicians for its production of gas and steam turbines and generators. "We have predicted a skills gap for the last five years and we're seeing it," says Pamela Howze, training and development manager at the company in Charlotte. "High school is all college-focused. It is to our detriment. We are a state-of-the-art and advanced manufacturer; everything is computer-run, with robots and lasers."

The Apprenticeship 2000 student-workers, like Friday, attend the Central Piedmont Community College and work at one of the program's partner companies. Among those companies is Blum Inc., an Austrian manufacturer of high-end cabinetry hardware. Blum co-founded the apprenticeship program in 1995 to find and train its own technicians. The company has graduated between three and six apprentices annually since 1995, a total of 49. "It changed everything for us," says technical training manager Andreas Thurner, who entered his own apprenticeship in Austria at age 15. "Most of our workforce comes out of this program now."

Students today can't get the kind of advanced manufacturing training in college they can on the job, Thurner says. "The companies are the ones who have the technical knowledge and the equipment."

Vocational education in the United States has struggled, in part, because of the notion that early "tracking" into a trade might derail students from the college track. But what happens to the non-college-bound student?

David LaRose, a graduate of the Chesterfield Technical Center in Chesterfield County, Va., says the stigma of career and technical educations persists. He even had trouble convincing his parents to allow him to attend.

Parents' Day at the center changed their minds. "We were all impressed by the amount of college credits that I would get, 19, the chance to earn industry high-level certi-

PHOTOGRAPHY: BLUM INC.

fications, and the chance to learn from industry professionals," he remembers. He studied computer systems at the center's Cisco Networking Academy.

Today, students at tech centers nationwide can choose from among 16 career "clusters" that include finance, transportation, human services, and lots of science, especially in health careers. For the 2012-2013 school year, the center in Chesterfield had 1,640 applications, up 4 percent from the previous year, says Michael Gill, executive principal of Career and Technical Education in Chesterfield County. The center offers about 1,000 spaces; more will become available when the county opens another center in 2014.

Students can get hands-on experience inside and outside the classroom. Automobile dealers, like manufacturing firms, want to "grow their own technicians," says Matthew Brown, the automotive technology teacher at the Chesterfield Technical Center. Apprentices during senior year attend class once a week and work the other four; they earn $8 an hour.

A machinist mentor instructs apprentices about the key features of a generator at Siemens Energy's generator factory in Charlotte, N.C. Producing the generators requires weeks of precise machining to tight tolerances.

Mike Garcia apprenticed as an automotive technician at the Lexus of Richmond dealership in 2004. Garcia graduated from high school with a 3.3 grade point average and opted for work over studies in architectural engineering at Virginia Polytechnic Institute and State University. "It was going to cost me, what, $20,000 a year? When I was presented with the apprenticeship program, they offered free tools, the chance to start working right away, and at the time it seemed like the easier thing to do," he says. "You can sit in a classroom and be told all these things, but you really learn when you work hands-on."

But training tailored to specific industries may be worth very little during a dramatic industry restructuring unless a worker has a knowledge base that lays the foundation for lifelong learning. A labor force that assimilates change improves economic growth prospects.

Trades and Trade-offs

For many youth, vocational education offers better employment prospects than general education, at least in the short term. Yet a dynamic, growing economy requires workers who can innovate, adapt, and spread that innovation, all of which is associated with general education. Evidence suggests that academic skills — math, reading, and scientific understanding — affect economic growth in this way by setting the stage for more learning, according to Hanushek.

In the labor market, the specific training that smoothed the transition to work in youth may prove to be a liability, not only for individual workers but ultimately for economic growth if they can't adapt to technological change as they age. Economists Hanushek of Stanford, Ludger Woessmann of the University of Munich, and Lei Zhang of Tsinghua University investigated early advantages of vocational relative to general education over the life cycle in a 2011 National Bureau of Economic Research working paper.

The authors studied the difference in employment, wages, and career-related training between those who receive a general education or a vocational education. They used data from the International Adult Literacy Survey, which details the education and skills of workers in 18 countries with varying vocational education and training regimes. The survey included information not only about schooling type and length but also age, gender, employment status, earnings, adult training, parents' educational attainment, and, significantly, cognitive test results.

Their findings suggest that those with general education fare worse in the job market — at first. As they age, however, their prospects improve in relation to those of vocational education students, even in countries with strong apprentice systems. Adult training, in particular, affects that pattern: Those with a general education had taken more career-related training relative to those with vocational education, "giving them the opportunity to continue updating their skills to be employed in a changing economy," the authors write.

But who comes out ahead? It depends where you look, and what you're looking for. In Switzerland, the authors find a positive lifetime earnings return for apprenticeship workers. "Early earnings gains more than make up for the gains in later earnings that accrue to workers with general training, and vocational workers have 8 percent higher lifetime earnings," according to the authors. The figure excludes costs, public and private, of education and training. In contrast, in Germany and Denmark, workers with general, rather than vocational, educations had 24 percent and 6 percent higher returns, respectively, on lifetime earnings.

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PHOTOGRAPHY: SIEMENS ENERGY

In recent years, Uncle Sam's annual cut of GDP has declined significantly

Revenue BREAKDOWN

BY KARL RHODES

During the fiscal year that ended Sept. 30, 2012, the federal government spent $3.5 trillion. It raised $2.4 trillion in revenue, primarily by taxing individuals and corporations, and it closed the resulting budget gap by borrowing $1.1 trillion. During the past four years, deficit spending has added more than $5 trillion to the national debt, more than all the deficits and surpluses (adjusted for inflation) from 1987 through 2008 combined.

This fiscal picture scares taxpayers and policymakers alike, but American fiscal challenges are nothing new; the struggle to pay Uncle Sam's bills is as old as the United States. It reflects a variety of conflicts, real or perceived: small government versus big government, poor people versus rich people, and ultimately, current taxpayers versus future taxpayers.

One hundred years ago, federal spending accounted for about 2 percent of gross domestic product (GDP). The United States funded its operations with tariffs and a few excise taxes, mostly on alcohol and tobacco. Those taxes were regressive because merchants passed them on to average consumers. The federal government "tried to put some tariffs on imported things that only rich people would buy, but many tariffs were imposed on things that everybody would buy," says Joe Thorndike, director of the Tax History Project for Tax Analysts, a nonprofit organization that publishes research on tax issues.

To make the tax system somewhat less regressive, the United States established an income tax in 1913. The tax was graduated from 1 percent to 7 percent, but it applied only to the wealthiest people. The low rates and high income threshold ($450,000 in today's dollars) generated little revenue, Thorndike says. "It was really a symbolic tax designed to say, 'Hey, you know what? We are going to make rich people pay their fair share.'"

The new tax earned its stripes during World War I after its top rate jumped from 7 percent to 77 percent. The war was expensive, and it disrupted the international trade that generated the tariffs that were paying most of the bills. "Tariffs never again went back to their predominance in the revenue system," Thorndike notes. "Income taxes and excise taxes became the foundation of federal finance."

The individual income tax helped the United States repay its World War I debt fairly quickly, even after prohibition corked alcohol taxes, which had become an important revenue source. The federal government regained its fiscal fitness during the 1920s as spending fell from 23 percent of GDP in 1919 to about 3 percent of GDP in 1928.

Just as outlays were approaching their historical peacetime average of 2 percent of GDP, the nation plunged into the Great Depression. Income tax revenues plummeted, and the federal government started looking for ways to fund President Franklin D. Roosevelt's New Deal programs. Congress established an excise tax on gasoline in 1932 that provided more than 6 percent of revenues in its first full year. The nation also repealed prohibition, and alcohol taxes accounted for nearly 13 percent of revenues by 1936. Government spending spiked above 10 percent of GDP, by far the highest peacetime level at that point in American history. So tax receipts fell woefully short, and borrowing funded more than half the budget in 1936.

During the Great Depression, excise taxes remained the largest source of federal revenue, but the new payroll tax to fund Social Security quickly provided the second largest revenue stream. This one-two punch made the overall tax system more regressive. Roosevelt tolerated regressive taxes because they brought in a lot of money, but he also wanted to create at least the appearance of a progressive tax system, and tinkering with tax brackets was a high-profile way to do that. The top individual income tax bracket had fallen

to 25 percent during the Coolidge administration, and Roosevelt persuaded Congress to push it back up to 79 percent. That top rate, however, applied only to annual income above $5 million (equivalent to $81 million today). John D. Rockefeller Jr. was the only taxpayer in that bracket, according to Mark Leff, a history professor at the University of Illinois at Urbana-Champaign and author of *The Limits of Symbolic Reform*, a history of New Deal taxation.

Revenue for War

"IT TAKES TAXES *and* BONDS," according to a propaganda poster that featured Uncle Sam trying to balance the "war budget" during World War II. Taxes and deficit spending skyrocketed to unprecedented levels to fund the war. Federal borrowing peaked at 30 percent of GDP in 1943, a year when government expenditures accounted for 43 percent of the U.S. economy.

Roosevelt and Congress raised corporate taxes and individual income taxes dramatically and kept excise taxes high. By 1944, the federal government claimed 94 percent of Rockefeller's marginal income, and he was no longer alone in the nose-bleed bracket because the income threshold for the upper crust had fallen from $5 million to $200,000. Roosevelt and Congress also raised taxes substantially on low- and middle-income people. In the bottom bracket, for example, people who earned $2,000 or less paid 23 percent. Revenues from the individual income tax exploded from $1 billion in 1939 to $17 billion in 1945. Excise taxes remained high as well, but during World War II, individual and corporate income taxes became the foot soldiers of federal finance. For the first time in American history, the United States achieved a progressive tax system from top to bottom.

At the height of the war, government revenues soared to slightly above 20 percent of GDP, and by 1950, they had fallen to slightly below 15 percent of GDP. Since then federal receipts as a percent of GDP have remained within that range. Through five wars, 10 recessions, 11 administrations, and countless tax code revisions, revenues rarely deviated much from their average of 18 percent. When 18 percent of GDP was not enough to pay Uncle Sam's bills, he borrowed the rest.

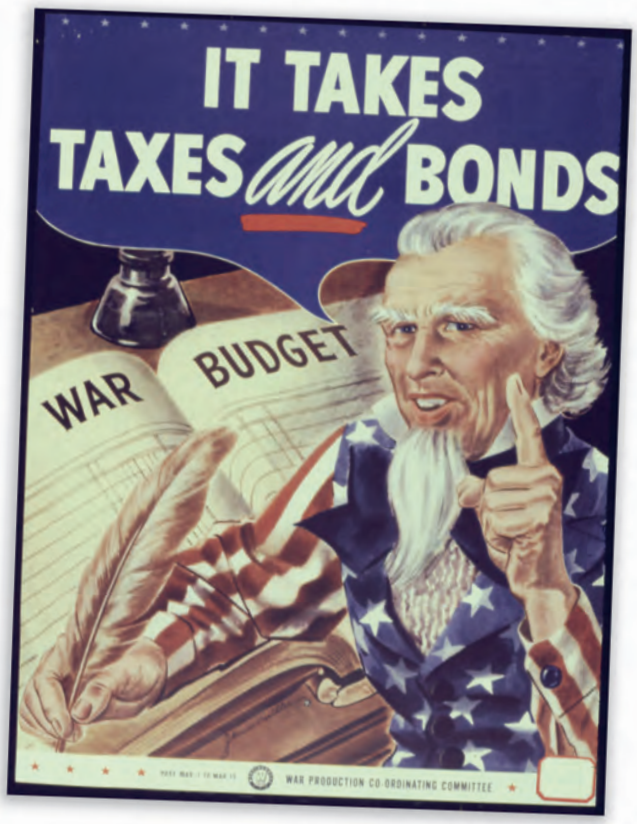
After World War II, pundits and politicians floated the idea of passing the nation's massive war debt to the next generation. "A lot of people at the time said, 'Hey, we did the fighting. It is not unreasonable to ask our kids to do some of the paying because we were securing their future,'" Thorndike says.

That argument faded as the economy expanded substantially during the Truman and Eisenhower administrations, reducing debt as a percent of GDP to a more manageable level. Taxes remained elevated, however, to fund growing social programs and the Cold War military buildup. By the end of the Korean War, federal spending briefly exceeded 20 percent of GDP — twice the level of Depression-era outlays. Federal spending rose to 20 percent again during the Vietnam War, and it has rarely dipped much below that level since then.

Bracketology

Throughout the Truman and Eisenhower administrations, the top individual income tax rate remained above 90 percent. "Although Eisenhower was not a great fan of those rates, he really didn't do anything to challenge them," Thorndike says. "I think he was not prepared to challenge the growth of the state. They were going to need a lot of money, and on top of that, he was a real budget-balancing fiend. He was willing to tolerate high taxes if it meant paying the bills."

Finally, the Revenue Act of 1964 (proposed by President Kennedy and signed by President Johnson to boost the economy) slashed the top income tax rate from 91 percent to 70 percent. Trade-offs between tax rates and tax revenues were not widely understood in 1964, but a marginal rate of 91 percent would have been well above the point where lowering the rate would generate more revenue. In the 1980s, President Ronald Reagan used this rationale to reduce the top rate from 70 percent to 28 percent. Even with such dramatic reductions in the top rate, individual income tax receipts remained roughly the same as a percent of GDP



POSTER: COURTESY OF THE NATIONAL ARCHIVES

Federal taxes and borrowing soared to unprecedented heights to fund World War II. Borrowing came down quickly after the war, but taxes never returned to pre-war levels.

from 1953 to 1996, under nine presidents (five Republicans and four Democrats).

With individual income tax revenues holding steady at about 8 percent of GDP for more than four decades, gradual growth in government spending was funded primarily by borrowing more money and by boosting payroll tax revenues from 1.8 percent of GDP in 1953 to 6.7 percent of GDP in 1988. (Payroll taxes are regressive, but the spending programs they fund are progressive on average.)

During this period, excise tax receipts contracted from 2.7 percent to 0.7 percent of GDP, and corporate income tax proceeds shrank from 5.7 percent to 1.9 percent of GDP. Companies may be able to pass some corporate taxes on to employees and customers, making corporate taxes less progressive. But the interplay between corporate income taxes and individual income taxes over the years suggests that shareholders, especially owners of private companies, do pay a large portion of corporate taxes. When the top individual rate was higher than the top corporate rate, owners paid themselves lower salaries to shelter their earnings inside corporations, notes David Kautter, managing director of the Kogod Tax Center at American University. To discourage this strategy, Congress came up with an "accumulated earnings tax." The distortion reversed itself in 1987, when the top individual rate dropped below the top corporate rate, and owners started paying themselves higher salaries, often as bonuses at the end of the year. The Internal Revenue Service tried to stop this practice by instituting the concept of "reasonable compensation." The rates finally converged at 35 percent in 2003.

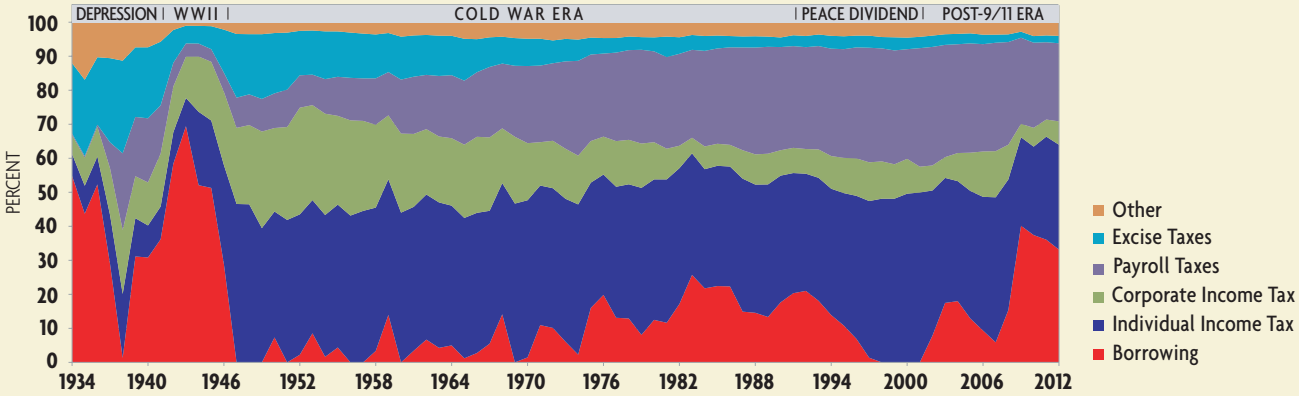
As corporate and individual tax rates came closer, many small and midsize business owners converted their companies to S corporations or limited liability entities to retain legal protections while getting rid of board meetings and other activities that the IRS requires of full-fledged corporations. These conversions shifted a lot of corporate income tax revenue into the individual income tax category.

"Right now the focus is on getting the corporate rate down and broadening the base by eliminating deductions and other preferences," Kautter says. "But if tax reform creates a spread between corporate and individual rates, you will see a return to tax shelters and corporate structures."

Unsoaking the Rich

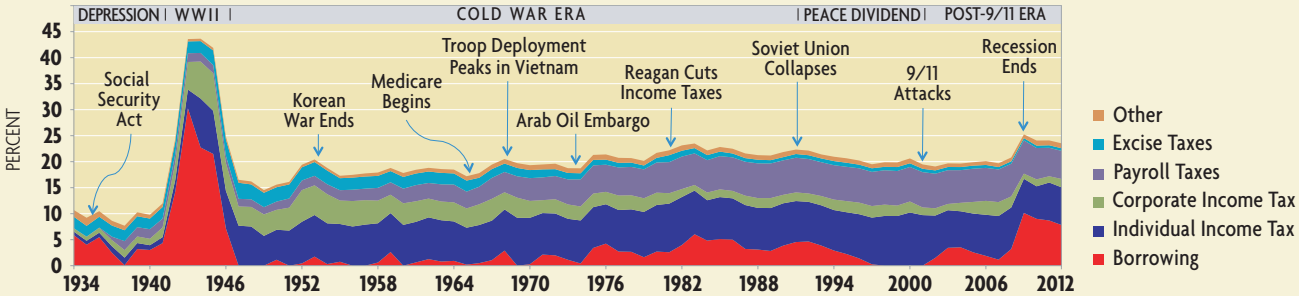
Tax tinkering that began in the 1960s appeared to make the federal tax system significantly less progressive. But a study

Federal Funding Sources as Percentages of Total Funding



NOTES: Figures for 2012 were estimated by the Office of Management and Budget in July 2012. Other includes estate and gift taxes; customs, duties, and fees; and earnings from the Federal Reserve System.
SOURCES: U.S. Budget for Fiscal Year 2013, Historical Tables and Mid-Session Review

Federal Funding Sources as Percentages of Gross Domestic Product



NOTES: Figures for 2012 were estimated by the Office of Management and Budget in July 2012. Other includes estate and gift taxes; customs, duties, and fees; and earnings from the Federal Reserve System.
SOURCES: U.S. Budget for Fiscal Year 2013, Historical Tables and Mid-Session Review

by Thomas Piketty of the Paris School of Economics and Emmanuel Saez of the University of California, Berkeley found that this conclusion applied primarily to the top 1 percent of taxpayers, especially the top 0.01 percent.

Their analysis of average federal tax rates from 1960 to 2004 indicated that the overall federal tax system became dramatically more favorable for the top 1 percent while maintaining roughly the same level of progressivity at all other income percentiles. Taxation, however, was extremely confiscatory for the top 0.01 percent in the first decade that they studied. These super-rich people carried an average federal tax burden of nearly 75 percent of their total income in 1970. That rate fell to less than 35 percent by 2004.

The Congressional Budget Office (CBO) documented the same trends in its study "Trends in the Distribution of Household Income Between 1979 and 2007." Overall, the study found that the federal tax system was about as progressive in 2007 as it was in 1979, but since average tax burdens decreased across the board, the income-equalizing effect of federal taxes declined from 10 percent in 1979 to about 7 percent in 2007. The CBO also noted that federal taxes declined substantially more for the wealthiest 1 percent of households.

President Barack Obama's proposal to raise taxes on only the richest taxpayers could satisfy the short-run need to generate more revenue "without crimping the economy," says Roberton Williams, a senior fellow at the Tax Policy Center, a joint venture of the Urban Institute and the Brookings Institution. "But in the long term, that does not do enough to close the budget deficit. We have to go much deeper than just the rich. We have to come down further in the income distribution to make a serious dent in deficits."

In the long run, the federal government cannot close even half of the budget gap by tweaking the existing tax system, Williams adds. Instead, the United States needs to implement comprehensive reform or "something extra" such as "a broad-based consumption tax."

Generational Struggle

The past few years of fiscal policy have been strikingly different than the previous five decades of fiscal policy, partly because political entrenchments seem deeper and partly because recovery from the recession of 2007-09 has been relatively weak and slow.

Wars, bailouts, and stimulus programs have pushed federal spending substantially higher (22.8 percent of GDP in 2012), while Obama's payroll tax cuts and extensions of President George W. Bush's tax cuts, among other factors, have pulled revenues substantially lower (15.8 percent of GDP in 2012). To bridge this gap, the United States has been borrowing at levels the Government Accountability Office calls "unsustainable over the long term." Even so, Thorndike of Tax Analysts does not expect a grand compromise on taxes to emerge anytime soon. "Tax reform happens when it has to, not when it should. We are not at a 'has to' point yet," he concludes. "I think it will happen when the financial markets determine that the path we are on is not sustainable. I don't think that regular voters or even politicians are ever going to come to that realization on their own."

Perhaps fiscal policymakers, most of them baby boomers, will strike a deal to balance the budget and reform entitlement programs, but paying down the national debt of $11.4 trillion may become more of a generational struggle than a tax-bracket battle. Boomers are showing every sign of transferring the national debt to their children and grandchildren — not to pay for a global conflagration, such as World War II, but to fund Social Security, Medicare, and Medicaid.

"Defeating the Nazis bought future generations a world without a hegemonic European fascist power. That was probably a good deal," Thorndike says. But the next generation will be paying back money borrowed primarily to fund entitlement benefits for baby boomers. "We are really asking our kids to pay for us — not for the world we are building for them." Such thorny questions about equity have no easy answers but will have to be tackled head on to address the country's mounting fiscal problems. **RF**

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Game Strategy in Fiscal Straits

When government debts become large, lessons of game theory might help avoid a crisis

BY RENEE HALTOM

Around the globe, policymakers are growing concerned with projections of high levels of public debt in the near future. In the United States, according to the nonpartisan Congressional Budget Office, government debt held by the public is slated to grow to more than 250 percent of GDP within 30 years if recent tax and spending policies continue. The projected growth in debt is due mostly to programs related to the aging population and health care. That debt level is nearly unprecedented among developed countries in global history. For the United States, it is more than double the record hit during World War II, and more than five times what the debt has averaged since then.

Such projections concern policymakers because of the likelihood that financial markets would cease lending to the government before such debt levels could ever be reached. That would likely force drastic, potentially sudden cuts in spending and spikes in taxes that could significantly hamper economic activity. That is the dominant interpretation of recent events in Europe, where escalating debt projections have been followed by rising borrowing costs for governments, forcing painful fiscal cutbacks and helping to tip the region back into severe recession. The scale of the mismatch between spending and revenues currently projected for the United States in the next several decades means that those managing the government's finances must formulate a plan for a sharp turn in spending and tax policies if they wish to rule out the possibility of having one forced by financial markets in a manner that would be undoubtedly more painful.

The trouble is that there are only three basic ways to reduce government debt: Pay it off with years of budget surpluses, default on it outright, or lower the real value of debt with inflation. The first two are difficult both politically and economically, a constraint that may create pressure on central banks to pursue the third option of letting inflation rise.

Inflation erodes debts with payoffs that are fixed in nominal terms — as more than 90 percent of outstanding U.S. Treasury securities are — since borrowers get to repay loans using dollars that aren't worth as much. Because central banks are the primary body in charge of managing inflation, Treasury officials and lawmakers could try to lean on them to inflate to ease the national debt burden. A central bank might even feel compelled on its own to purchase government debt, paying for it with newly created money. Such pressures might be especially acute in times of crisis, when central banks are often asked to act quickly to prevent economic collapse. Those purchases, if large enough, could ultimately lead to inflation.

Most countries have taken action over the last 30 years to keep central banks an arm's length from government influence, and most central banks are also legally bound to promoting price stability rather than worrying about government finances. The idea is that if the fiscal authority knows the central bank won't come to its rescue, it will be forced on its own to keep its books in order.

But the relatively new paradigms of independent central banking and inflation targeting have not yet been tested by a fiscal crisis. That is, no one knows what happens to inflation when governments run large, persistent deficits despite an independent central bank that is committed to an inflation goal. In all the theories that show those paradigms as successful ways to keep inflation under control, "there's an asterisk that says, 'Oh, by the way, for this to work, the government has got to go along and adjust future surpluses'" to balance government debt, says University of Chicago economist and finance professor John Cochrane. When they don't, pressure on the central bank to inflate will mount.

Inflation is not a foregone conclusion, however, especially if policymakers can find a way to tie their own hands. That's where game theory comes in. Game theory, a branch of economics that was originated by mathematicians in the 1940s and 1950s, studies the interactions of two or more conflicting parties, ranging from competing businesses, to warring nations, to parents and children. It seeks to predict the parties' likely behavior and to suggest ways for them to achieve objectives that they might not otherwise be able to agree on. In some contexts, game theory shows how the parties can collaborate to achieve their goals. But when their objectives are in conflict, game theory shows how each can try to force the other's hand, sometimes by binding themselves from the ability to acquiesce to the other's demands. A classic example is that of hostage negotiations with terrorists. One could obtain a hostage's release by making concessions to the kidnapper. The trouble is, on a sustained basis that strategy only rewards kidnappings, encouraging more of them. On the other hand, an established policy of outright refusal to negotiate with terrorists — if that pledge is credible — might convince them that kidnappings aren't worth the effort.

Self-restraint with an eye toward long-term goals is a recurring theme when game theory is applied to the policy world, where expectations about future policy drive the behavior of households, businesses, and investors today. Then it can be valuable to create the expectation that policymakers will follow through on promises to make responsible policies even when those policies are no longer in the policymaker's self-interest.

Inflation is not a foregone conclusion if policymakers can find a way to tie their own hands.

This lesson of game theory points to a few things current policymakers might do to prevent fiscal and economic catastrophe in the face of ever-growing debt. For fiscal policymakers, that could mean committing, somehow, to not running debts beyond control; for monetary policymakers, it could mean committing themselves, somehow, to not stepping in to shoulder the burden. But a fundamental lesson of game theory is that making promises credible can be tricky.

Fiscal Inflation

In most economic models, fiscal policy is of no concern whatsoever for the central bank. Monetary policy is, in normal times, able to undo any effect that fiscal policy has on the economy — for example, raising interest rates to stifle excessive growth if fiscal authorities provide too much stimulus — such that fiscal policy can safely be assumed away to make monetary models neater.

The exception is a troubling line of research that focuses on the pressure central banks face to inflate when the government runs chronic deficits. It's an old idea, first explored in depth in a 1981 article by economists Thomas Sargent and Neil Wallace, now at New York University and Pennsylvania State University, respectively. Theirs was the first formal model showing how fiscal imbalances could lead to inflation, a striking finding because general price increases are traditionally considered to be determined solely by the central bank's goals. The possibility of inflation emerging from fiscal rather than monetary sources to this day does not tend to appear in the models discussed in central bank conference rooms, perhaps because fiscal imbalances as large as those the United States is currently facing have been rare.

The story of how so-called "fiscal inflation" could unfold is straightforward: Investors continue to buy government debt only if it seems likely that fiscal authorities will raise enough surpluses in the future to repay its bondholders. As the total outstanding debt grows, ever greater surpluses are required. Surpluses can grow only so large, however, for both political and economic reasons. At some debt level, the surpluses required will appear simply infeasible to raise.

No one knows what that debt threshold is. It is not easy to form an estimate of just how high taxes can get, or just how weak-willed the central bank might be. But even current debt levels are demonstrating the scale of difficult fiscal choices that will have to be made. Suppose policymakers wanted to reduce gross government debt to 60 percent of GDP from a gross debt level of about 99 percent of GDP in 2011. (Gross debt measures total outstanding debt, whereas debt held by the public, the more common debt measure, focuses on debt potentially subject to financial market panic and stood at 68 percent of GDP in 2011.) The International Monetary Fund (IMF) recently estimated that to do so, the United States would need to run a primary budget surplus — the budget minus interest payments on debt — of 5.1 percent of GDP by 2020 and sustain it through 2030. By way of comparison, the United States ran a primary *deficit* of 8.9 percent of GDP in 2010, and the next several decades are when the aging population will hit the government's budget hardest. If financial markets decide the government is no longer likely to repay its debt and investors stop buying, the only way to avoid outright default is for the central bank to intervene.

Of course, the central bank could simply refuse to step in, choosing to let the government default before igniting inflation. But that's a tall order since the circumstances that would likely surround a fiscal crisis — financial market panic, a sharp contraction in fiscal policy, and uncertainty about the future — would also directly jeopardize the central bank's objective of maintaining economic stability. In a debt crisis, even the most conservative central banker may choose to intervene in hopes of stemming a panic before it grows more severe and spills over to the broader economy. This is what the European Central Bank has done by providing liquidity to government bond markets since the debt crisis unfolded in early 2010. Critics argue that move has been not much different than monetizing government debt, the first step toward this scenario of fiscal inflation.

What's more, it may even be possible for inflation to spike in a fiscal crisis even if the central bank does nothing. That's because expectations of the central bank's intervention could have the power to create inflation before a single dollar is printed. Investors in government bonds — such as pension funds, 401(k) account managers, and local governments — typically roll over their investments when they come due. But if they start to suspect the central bank's intention to inflate, they may instead flee government bonds and buy other things since, as Cochrane puts it, "not getting paid back via inflation is very much the same thing as not getting paid via default." As money pours into real assets that are less sensitive to inflation, such as commodities or real estate, their prices will rise. Higher paper wealth will then boost spending on goods and services, leading to general inflation. Similarly, if the general public begins to fear that the central bank will acquiesce to inflate away the real value of the debt, prices and wages would reflect that possibility, creating inflation immediately — before the

central bank has actually engaged in any activity at all.

In other words, central bankers may be powerless to prevent inflation driven by the public's expectations when the government runs debt high enough. There are no economic theories or case studies from history that can reliably tell us at what level of debt these shifts in expectations might occur. The primary sign that it is happening would be rising interest rates on government debt as compensation for the added risks of inflation and default. That was the first sign of crisis in Europe in early 2010. So far, that hasn't happened in the United States despite bleak projections for debt; in fact, government borrowing rates remain at historic lows. That's largely due to the Fed's efforts to stimulate the economy with low interest rates, as well as the global "flight to relative quality" as investors have sought refuge from the financial crisis and sovereign debt problems in Europe. But expectations can shift at any time, and that means low interest rates cannot reliably be interpreted to mean a fiscal crisis isn't on the horizon.

Creating Rules for Fiscal Policy

The aspect of this story that might keep central bankers up at night is that it suggests fiscal policy choices can completely overturn the benefits of central bank independence and inflation-fighting credibility, which economists say have been the key to keeping inflation low over the last 30 years.

Central bank independence and an emphasis on inflation were designed in part to overcome a problem formalized in game theory known as "time inconsistency." That's when an agent has an incentive to promise stakeholders that it is going to do one thing but do something different when the time comes to follow through. For example, since inflation is determined in part by inflation expectations, the central bank can more easily achieve price stability if people are convinced that fighting inflation is its primary goal. But once low and stable inflation has been incorporated into wages and prices, the central bank can renege on its promise by pursuing accommodative policies in an effort to boost economic growth — which can cause inflation. Since the public can foresee the central bank's incentive to renege, the central bank's credibility is bolstered if its discretion is limited. Two ways of doing that are the adoption of explicit inflation goals, and central bank independence, which insulates the central bank from political pressure to stimulate growth at the expense of those goals.

Time inconsistency is an especially important force during a debt crisis. It would be easy for policymakers to assure investors that a budget fix is coming, but then kick the can once market fears have subsided. Because the public can see this plainly, talk must often be backed up with action in order to truly calm markets, and even that can be difficult. As the current European debt crisis unfolded, repeated government pacts, bailouts from international monetary authorities, and fiscal commissions repeatedly failed to reassure markets once and for all that certain sovereign governments would remain a good lending risk.

"In order to make crisis impossible, we have to have a plan for how fiscal authorities will respond" in the event that a crisis starts to unfold, says economist Marco Bassetto at the Chicago Fed. "That plan has to have the property that it would make people regret having not continued to buy government bonds," by adopting a credible plan to ensure the debt gets repaid. That plan would need to be explicit about how fiscal and monetary authorities will behave, and would need to be made sufficiently transparent to the public in advance to have the needed effect on expectations.

One way to establish a credible plan for resolving fiscal imbalances is through the adoption of fiscal rules: permanent, legislated limits on certain budgetary variables. These might include requirements that the government balance its budget on average over a set of years, pay-as-you-go restrictions that force spending increases to be matched with higher taxes or reduced spending elsewhere (like those adopted by Congress, with successful budgetary results, in 1990 and phased out in 2001), or medium-run targets for the debt-to-GDP ratio. Such rules would have to be very hard to modify later on, lest pressure on policymakers be brought to escape their enforcement.

Fiscal rules are a new but growing phenomenon in the global economy. Eighty countries, including 21 advanced economies, have them at the national or supranational level, a dramatic increase from just 20 years ago when only seven countries had them, according to a 2009 report by the IMF. Excessive public debts that accumulated during the 1970s and 1980s encouraged rule adoption in the United States, Canada, and Latin America, while rules in Europe and other regions were spurred to force conservative fiscal policies on monetary union members.

The Challenges of Fiscal Rules

Given that fiscal rules are relatively new, they are still being tested by economists and business cycles, so they still have unresolved issues.

One is the problem of discretion. Even if it were possible, it's not clear that it would be entirely desirable to eliminate discretion from fiscal policy. Many economists argue that budgetary rules ought to include some flexibility in the short run to allow adjustments to economic shocks, like the ability to lower taxes or raise spending in a recession. In fact, the 2009 IMF report argues that allowing for cyclical contingencies actually made fiscal rules more credible in the eyes of markets in the eight developed countries that adopted such structures. Perhaps leaving room for the measures that fiscal policymakers might be inclined to take in a recession made the rules seem more realistic, and therefore less likely to be violated. The IMF also noted, however, that those countries already enjoyed a high degree of market confidence, and the rules also came with strong monitoring and enforcement mechanisms.

In fact, instating external enforcement groups has proven to be one way to retain some discretion but also maintain credibility. The point is perhaps best expressed through

counterexample: Europe passed the Stability and Growth Pact (SGP) in 1997 to create explicit annual deficit limits of 3 percent of GDP for countries wishing to join the euro monetary union. Once joining the euro, however, it turned out to be not all that painful for countries to deviate from the rule. There were no national-level institutions designed to stop countries from running higher deficits, and the European institutions in charge of enforcement above the national level were given increasing discretion to waive punishments. As a result, the rules weren't successful at constraining governments' behavior, nor at stopping financial markets from running on government debt in the spring of 2010.

Other countries have found success with a more informal kind of enforcement through independent fiscal commissions that very publicly call attention to budgetary lapses. About one-fifth of advanced economies with fiscal rules have them. Sweden's Fiscal Policy Council, one of the most well-known examples, has no official authority, but has garnered enough institutional prominence that Sweden's Parliament can't avoid responding to its warnings. Chile, the Netherlands, and Hungary have similar setups. (The CBO partially serves this purpose in the United States by publishing accounting analyses of the budget, but it does not function as a government watchdog.)

Perhaps the biggest hurdle to adopting fiscal rules is that there is substantial disagreement within the economics profession and policy circles alike about what makes good fiscal policy. "Economic theory doesn't tell us whether we should have more or less redistribution, or more spending on public goods, more taxes, or less of both," Bassetto notes. "That's an area that is very much about the preferences of a city or country." Monetary rules are easy by comparison. All economists agree that very high inflation is bad, and it is easier to design an institutional arrangement centered on getting that one thing right, he says.

Compared to monetary policy, there is comparatively little research on fiscal policy. "I am constantly amazed at how profoundly ignorant we are about fiscal stuff," says economist Eric Leeper of Indiana University. But Leeper argues that it's a mistake to relegate all of fiscal policy to the political realm, and that a more scientific approach may be possible when it comes to some basic fiscal questions: Should there be a debt target? If so, what should it be? How quickly should you return to it after a lapse? What are the effects if you return to it through tax versus spending changes? "These are, to me, all scientific questions, not political questions. There are no obvious distributional effects of having a given debt-to-GDP ratio," for example, he says.

Fiscal rules may be hard to implement successfully, but that may not be a sufficient reason to shy away from having them in the first place, since the lack of any clear fiscal strategy could make expectations of an inflationary outcome more likely. Markets know that the government would desire opacity when it has no intention of trudging the tough path toward fiscal sustainability. In that instance, "an explicit plan may make it clear that there's no way to avoid bad scenarios," Bassetto says. Yet when there is no explicit plan for wrangling chronic deficits with fiscal retrenchment, markets may be more liable to suspect that the *implicit* plan is for monetary policy to give in.

Low government borrowing rates cannot reliably be interpreted to mean a fiscal crisis isn't on the horizon.

If all else fails, another strong lesson from game theory is that where policy rules are imperfect or absent, a strong reputation can help fill the void. No fiscal rule can possibly be specific enough to cover every possible budgetary and economic scenario, but that's less of a problem if there are policy leaders in place who have a reputation for prioritizing fiscal sustainability, argues Bassetto. "What those decisions have to be on a day-to-day basis needs to be explained less if you know that you have somebody in charge who has that as a goal."

In fact, when the public comes to expect long-run fiscal sustainability, it can actually reduce the total price tag of fiscal reform compared to when that adjustment takes place as a result of financial market panic and emergency cutbacks. Italy faced such long-term reforms in the 1990s when it sought entrance to the euro monetary union, which required deficit reduction under the SGP's rules for euro entry. At the time, borrowing rates for 10-year Italian government bonds were relatively high at more than 13 percent, due in part to inflationary expectations from the untenable fiscal situation, according to research by Bassetto. If Italy could assure markets that the central bank would not bail out fiscal policy with inflation, the resulting decline in interest rates would relieve strains on government finances in the short run and put the euro area's deficit-to-GDP target in easy reach, he argued in a 2006 study. To create those expectations, Italy installed central bank technocrats in its government with strong reputations for fiscal and monetary conservatism. "They still had to do some fiscal adjustment, but once markets started to believe that an adjustment would take place, the magnitude wasn't very big" compared to adjustments that took place during previous fiscal crises, Bassetto says. "It was mostly managing expectations just enough that interest rates would come down."

Starving the Beast with Monetary Policy

In the absence of binding fiscal rules, what choices do monetary authorities have to prevent fiscal inflation? Some economists argue that inflation targeting could help. Inflation targeting is the practice of adopting an explicit numerical target for inflation. In the parlance of game theory, an inflation target allows the central bank to "move

first" by making a commitment that is hard to exit. That might encourage fiscal authorities to deal with budgets on their own.

There is some evidence that this can be successful. Comparing inflation-targeting and non-targeting countries, a 2012 study by Jan Libich at Australia's La Trobe University, Michal Franta of the Czech National Bank, and Petr Stehlík at the University of West Bohemia found that, after the adoption of an explicit inflation target, monetary policy grew less accommodative to debt-financed fiscal shocks in Canada, the U.K., and Australia. In contrast, in non-targeting countries, the degree of accommodation over the same period didn't change much. It even increased in the United States, a non-targeting country. Monetary outcomes improved in each of the inflation targeting countries, as did fiscal performance within one to three years post-adoption of the inflation targeting regime.

There is anecdotal evidence, too, that fiscal policymakers pay attention to the limitations created by an inflation target. New Zealand's central bank, the pioneer of inflation targeting, obtained the deference of fiscal policymakers after announcing in 1989 that it would adopt the regime the following year. In 1990, the government, faced with losing re-election prospects, pitched an expansionary budget to the populace. Don Brash, then head of New Zealand's central bank, immediately made it clear that the expansionary fiscal policy would be countered with firmer monetary conditions to keep inflation in check. "I was later told by senior members of the Opposition National Party that the Bank's action in tightening conditions in response to the easier fiscal stance had had a profound effect on thinking about fiscal policy in both major parties in Parliament," Brash said in a letter to Libich, Stehlík, and Andrew Hughes Hallett of George Mason University and the University of St. Andrews, which was later reprinted in a paper presented at the 2012 meetings of the American Economic Association.

To be sure, central bankers hoping to bring fiscal policymakers into line with such a move may be taking a risk — the risk that elected officials could in turn strike back at the central bank's independence.

Libich argues that another way inflation targeting might encourage fiscal sustainability is by garnering political support for fiscal reform. One reason fiscal reforms are difficult is that they are feared by politicians since they are perceived as hurting re-election outcomes. Libich and Stehlík showed in a 2012 paper how the central bank's public commitment to an inflation target may act as a credible threat of a costly policy tug-of-war. The target "better exposes to voters the undesirable inflationary consequences of excessive fiscal policy, and thus improves the government's incentives to implement necessary long-term fiscal reforms," Libich says.

Still, it is not certain that inflation targeting is a silver bullet to preventing fiscal inflation. Though studies reveal a correlation between the two, the adoption of inflation targeting may instead signal broader support for policy overhauls that make tougher policies, including the fiscal variety, as a practice more feasible. And some nations, such as Sweden, adopted inflation targets around the same time as important fiscal reforms, making it statistically unclear which reform was the greater factor in successful monetary and fiscal outcomes.

Perhaps more important, central bankers can't constrain fiscal policymakers in any meaningful sense. Nothing but democracy can prevent fiscal authorities from choosing to run chronic deficits or ignore the coming demographic demands on fiscal resources, essentially forcing the central bank's hand. "There's an accounting constraint on this game," as Cochrane puts it. "If economies don't want to default and don't want to do structural reform [to produce surpluses], the rules of accounting don't leave any other option" but inflation. That leaves open the possibility that financial market expectations will shift toward an inflationary outcome as debt grows, no matter how strong the central bank's credibility or monetary rules.

In the end, resolving large government debts without the significant macroeconomic pain associated with inflation, debt default, or sudden fiscal retrenchment requires longer-run fiscal reforms before a crisis is at the door. Those reforms might be bolstered by a credible commitment to keeping fiscal policy sustainable, making fiscal policy the next great example of how game theory has improved policy outcomes. **RF**

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Monetary Policy and Mortgage Problems

BY CHARLES GERENA

"Do People Understand Monetary Policy?" Carlos Carvalho and Fernanda Nechio, Federal Reserve Bank of San Francisco Working Paper 2012-01, January 2012.

Quick quiz: When inflation is rising and unemployment is low, what does the Fed usually do? The answer has long been to increase interest rates in order to make money more costly and keep the economy from overheating.

Targeting interest rates in response to changes in inflation and output — and, thus, following something like the "Taylor rule" — is a monetary policy approach that is much discussed among researchers and central bankers. But if individuals and businesses don't fully understand how the Fed meets its dual mandate of price stability and maximum employment, policymakers may have a harder time managing inflation expectations and, in turn, keeping prices stable.

Carlos Carvalho of the Pontifical Catholic University of Rio de Janeiro and Fernanda Nechio of the San Francisco Fed try to gauge the public's level of monetary policy literacy. Using the Thomson Reuters/University of Michigan Surveys of Consumers, they examine responses related to the future direction of price movements, interest rates for borrowing money, and unemployment to see if they are consistent with the Taylor rule. For example, if people who believe unemployment will decline are more likely to believe that interest rates will go up in the future than those who forecast rising unemployment, they are making a connection that is consistent with the Taylor rule.

Carvalho and Nechio find there is some awareness of how monetary policy happens. "The degree of awareness, however, does not appear to be uniform across income and education levels, and age groups," the economists note. "Higher income, more educated, and older households appear to be more aware of the Taylor rule than younger, less educated, and lower income households."

"Why Did So Many People Make So Many *Ex Post* Bad Decisions? The Causes of the Foreclosure Crisis." Christopher L. Foote, Kristopher S. Gerardi, and Paul S. Willen, Federal Reserve Bank of Boston Public Policy Discussion Paper 12-2, May 2012 (also published as Federal Reserve Bank of Atlanta Working Paper 2012-7, May 2012).

Here's a familiar storyline about the mortgage default crisis — brokers persuaded prospective homeowners to take out unconventional loans that they eventually couldn't afford, while investment bankers persuaded investors to buy hard-to-understand mortgage-backed securities that were far riskier than investors appreciated. In both cases, the "insiders" exploited information that the "outsiders" didn't have, motivated by their lack of exposure to the downside of the transaction.

In their May 2012 paper, Christopher Foote and Paul Willen of the Boston Fed and Kristopher Gerardi of the Atlanta Fed argue this "insider/outsider" depiction of the foreclosure crisis is inaccurate. Rather, the authors assert, people were simply "overly optimistic" about the future path of the housing market.

"Higher house price expectations rationalize the decisions of borrowers, investors, and intermediaries — their embrace of high leverage when purchasing homes or funding mortgage investments, their failure to require rigorous documentation of income or assets before making loans, and their extension of credit to borrowers with histories of not repaying debt," they note. "The bubble theory therefore explains the foreclosure crisis as a consequence of distorted beliefs rather than distorted incentives."

"Time-to-Plan Lags for Commercial Construction Projects." Jonathan N. Millar, Stephen D. Oliner, and Daniel E. Sichel, Federal Reserve Board of Governors Finance and Economics Discussion Series 2012-34, April 2012.

Following the last four recessions, commercial construction recovered more slowly than the economy as a whole. Part of the reason may be the time required to plan a project before a single shovelful of dirt is turned. Yet little is known about the typical length of this "time-to-plan" lag or the factors that influence it.

Jonathan Millar and Daniel Sichel at the Federal Reserve Board of Governors and Stephen Oliner at the American Enterprise Institute provide their best estimates of the time-to-plan lag based on an analysis of more than 80,000 commercial construction projects in the United States from 1999 to 2010. They find the lag was quite lengthy — averaging one year and five months — and was the longest for larger, more complex projects and those located in metropolitan areas in California and the Northeast.

Another key finding is that the regulatory environment faced by project planners contributes to some of the variation in time-to-plan lags across locations. Using results from a survey of land-use regulation in 6,900 municipalities, Millar, Sichel, and Oliner find a positive correlation between lags and the number of local agencies required to approve zoning changes. Also, "the planning period tends to be shorter in places (i) that require developers to help pay for infrastructure improvements, (ii) that restrict the density of development, (iii) that have greater political opposition to development activity, and (iv) whose land-use regulations tend to be upheld by the courts." **RF**

Interview

Steven Landsburg

Many people find economics inaccessible and the questions economists pursue often divorced from the issues they face in their own lives. Steven Landsburg has spent much of the last 20 years trying to make economics understandable and relevant to a broad audience, through a column in *Slate* that ran from 1996 to 2008 as well as a number of books, most famously *The Armchair Economist*. Part of the motivation for this work is that Landsburg himself came to economics from a different discipline, earning a Ph.D. in mathematics at the University of Chicago. After completing his Ph.D., he was awarded a post-doctoral fellowship in economics at Chicago. But much of his education in economics came from informal conversations with economists who debated a broad range of issues, trying to find out which arguments worked and which didn't.

Landsburg is a professor of economics at the University of Rochester, though he continues to pursue academic work in mathematics. His interests range across a number of other disciplines as well, including philosophy, which he believes is crucial to evaluating the desirability of many economic policy issues. How, for instance, should individuals, policymakers, and society as a whole determine what should be maximized without first having ideas about what is just?

Landsburg runs a blog, thebigquestions.com, where he and his readers discuss such questions and many others. Aaron Steelman interviewed Landsburg in October 2012.

PHOTOGRAPHY: JOHANNA BOBROW

RF: What prompted you to write *The Armchair Economist*?

Landsburg: One day in 1991 I walked into a medium-sized bookstore and I found more than 80 books on fundamental physics and cosmology, a couple dozen on evolutionary biology, and Richard Dawkins' classic on the selfish gene. And the best of those books made me feel like I had been allowed to partake in a great intellectual adventure. They were exciting; they gave me new ways of seeing the world. Economics is also a great intellectual adventure, and yet there was no book that aimed to share that with the layman. So I resolved to write that book. I thought that I could do it, partly because I had just written a textbook and believed I could write, but also because I had the enormous advantage of having lunch every day with a boisterous and brilliant group of economists who were out to use economics to understand everything about the way the world works, and everything about the way the world could be made better. And those lunches were among the most exciting intellectual events of my life. Every day somebody would come to lunch with a completely out-of-the-box idea, and it would get ripped to shreds, and it would get rebuilt from the foundation. People were absolutely committed to intellectual honesty — if somebody found a mistake in your idea, you would abandon it immediately. And people were very committed to intellectual consistency. If it was pointed out to you that you had just said something that contradicted something you had said a couple years ago, people worried about that — they worried about getting things right and whether they were wrong then or wrong now. I would come back to my office every day, thinking what a tremendous privilege it was to be present for those lunch conversations and that I wanted nothing more than to share them with the world. So *The Armchair Economist* was partly a chronicle of what I had learned at lunch.

Another reason, in addition to the fact that I thought I could write it and had that material coming from the lunch group, was that having no degree in economics, having no course background in economics, I was largely learning the stuff myself or learning it from friends. I thought that gave me some real insights into what were the difficult things to learn, the easy things to learn, and what were the explanations that worked and those that didn't work.

RF: Since you wrote *Armchair*, there have been many other "popular economics" books published. How do you think *Armchair* differs from some of these?

Landsburg: I take pride in the fact that even with all those competitors out there, my sense is that *The Armchair Economist* is the book that economists generally advise their noneconomist friends to read. It's the book that economists give to their mother when they want their mother to know what they do all day. A lot of those other books are quite good. I have reviewed several of them, and I have reviewed several of them positively. *Freakonomics* stands out from the bunch, not just by its sales, but also in being more about facts than about logic. I think it's a rollicking good read and gave it a rave review in the *Wall Street Journal*, but it is of a somewhat different genre than the other books that have been published. It doesn't really try to explain the logic of economics the way *Armchair* does and the way some of those others really do.

> When you are forced to a really counterintuitive conclusion, from what appeared to be completely noncontroversial principles, that's when you've learned something.

RF: To what extent do you think basic economic ideas are essentially intuitive when explained clearly?

Landsburg: To understand economics seems to require repeated exposure for a lot of people. And after many years of thinking about this stuff, I sometimes am baffled that it is so difficult for so many people to grasp. But I have to remind myself that it was difficult for me to grasp at the beginning too. These are ways of thinking that most people don't have in their toolkits unless they have really studied economics. My general experience — talking to students and communicating with the general public — is that a lot of extremely intelligent, extremely thoughtful, extremely well-educated people have a great deal of difficulty grasping the logic of an economic argument.

RF: Turning to *Fair Play: What Your Child Can Teach You about Economics, Values, and the Meaning of Life*, what have you learned from explaining economic issues to your daughter from quite a young age?

Landsburg: Well, explaining economics to undergraduates requires you to boil it down much more to the essentials than explaining it to graduate students. And explaining it to freshmen requires more of that than explaining it to seniors. And explaining it to third-graders requires you to really get at the absolute essence of the issues, and that makes you think very hard. But part of the message of *Fair Play* was not so much what I learned by explaining economics to my daughter. A lot of *Fair Play* is about what I see as the disconnect between the things people teach their children and the way people behave in the marketplace. We often accept protectionist legislation to protect people from competition, which I think nobody would tolerate on the schoolyard if a bunch of kids formed a cartel and refused to let anybody else trade with them or their classmates, or if we refused to let kids in one class associate with kids from other classes. I think we would all view that as ugly. Why don't we view that as ugly when it's done on a grand scale? A lot of *Fair Play* is about that kind of disconnect.

RF: In almost all of your writings, one gets the sense that without a theory of the good — of the desirable and the undesirable, the fair and the unfair — you believe it's hard to say much of consequence about a lot of issues.

Landsburg: I think it's impossible to do any kind of policy analysis without making some ethical judgments. I also think that economists have made an excellent case for the efficiency criterion as a general standard for policy. There are many different ways that you can present this to your students. I have just finished writing the 9th edition of my textbook and I now have four separate sections on four separate arguments for why you might want to buy into the efficiency criterion. Those are all ultimately philosophical arguments, but they're completely informed by an economic way of thinking.

If you are going to argue for one policy over another, then you have to argue at some level that this policy is good and the other policy is bad, and the difference between what's good and what's bad is a philosophical question, however you address it. I think that economics often, though perhaps not always, gives you all the tools you need to do that, but the mere fact that all the tools come from economics does not mean it is not ultimately a philosophical question.

RF: Why does price theory offer such a powerful set of tools for understanding a broad range of issues?

Landsburg: Part of it is evolution. The ideas that work survive, and the ideas that don't work don't survive. You could, of course, equally ask why physics has such a powerful set of tools for understanding the physical world, or why mathematics has such a powerful set of tools for understanding the world of abstraction. These are things that people have considered for a very long time, and most of the ideas that people came up with have long since been discarded. But the good ones generally survive.

Now, it is true that economics has been more successful than some other subjects. I suspect that partly has to do

with the culture in economics of being willing to follow logic wherever it leads you, of not rejecting something just because it's counterintuitive, of not having preconceived notions of where you're trying to go. There are people who violate those principles all the time, but there is a general culture of being the servant of logic, not the master of logic. That certainly is behind the success of physics, the success of mathematics, and I think it's also behind the success of economics.

RF: You make frequent use of counterintuitive examples in your books.

Landsburg: Counterintuitive examples do run the risk of just causing some people to shut down. But I like them because, first of all, they're fun. We laugh at jokes because they're counterintuitive. They appeal to the sense of playfulness in us. So, partly, it filters the audience. The people who are just not willing to listen to something counterintuitive are probably the people who are not going to learn anything anyway. It brings in the sort of people who have more open minds.

Beyond that, when you are forced to a really counterintuitive conclusion, from what appeared to be completely noncontroversial principles, that's when you've learned something. I mean, if all we ever learned were things we sort of knew anyway, then we wouldn't really be learning. The fact that a set of noncontroversial principles leads to a very surprising conclusion causes you to become aware that those principles are much more powerful than you thought they were. It causes you to confront your prejudices, causes you to open your mind up and be willing to see the world in a somewhat wider way, and makes you more open to the idea that you might be wrong about other things. It helps you understand that there might be a lot of things that are worth rethinking that you didn't have exactly right the first time around.

RF: What role do you think economists should play in speaking not only to the public but also to policymakers? And what pitfalls might come with that?

Landsburg: I have not had the experience of being asked to be anyone's policy adviser. I suspect that it would be very easy for an honest person to fall prey to a certain amount of corruption there, because you want to be a team player, you want to be on board with the general thrust of where the candidate is going. That might not cause you to say things you don't believe, but it might cause you to pick and choose your emphases — pick and choose what issues you're going to talk about. So I worry about that.

I also worry about the general human tendency to pretend that we know more than we really do. And whenever somebody gets put in the spotlight and asked his views on policy, I think there's a tendency to pontificate, there's a tendency to think, well, all these people are asking me this question, that must mean all these people think I'm very wise, and so I should share my wisdom. But we all know as economists that there are plenty of things we don't understand. We also all know as economists that there are plenty of things that we understand much better than we usually get credit for. And I think that it is important for us to keep telling people over and over again that there are things we understand, and that we're right about those things, and that they will do better if they listen to us.

RF: You wrote in *Forbes* that trade and immigration are the two most important issues for you. Why?

Landsburg: Trade and immigration are the two most important issues for me for several reasons. First of all, the economics is so unambiguous that trade and immigration are, on balance, good things by just about any normative criteria you would want to apply because their benefits are so very widespread. And beyond that, so many of those benefits go to the world's very poorest people. When we open our borders to trade, when we open our borders to immigration, Americans as a group benefit, but very poor people in other countries also benefit. I think it's a great thing that I don't have to trade off benefits to Americans versus benefits to foreigners, because the economics tells me that both sides are going to benefit. But even if I did have to trade them off, I would have to say that I am more concerned about policies that will benefit people who have the misfortune to be born in Mali or Albania or the poor parts of Mexico than will benefit middle-class Americans.

I am very disturbed at a visceral level by people who think that we should care more about people who happen to share a nationality. To me, that's no different in terms of the way it feels than caring more about people who happen to share your race. People will disagree about that, and I think I have to acknowledge that this is not an economics point. It's a point of personal preference, of aesthetics — it may be no more interesting than the way I like my eggs cooked in the morning — but I do have that very strong visceral feeling that, when we set policy, we should care about the effects for everyone. And in many ways, I care more about a normative criterion that says that when people are extraordinarily poor, through accidents of birth, those are the ones that we should put a little more emphasis on.

In addition, I just have this visceral, gut antipathy to people who want to try to tell other people who they should hire, who they should trade with, who they should transact with. Again, as I noted in my response to your question about *Fair Play*, it just feels ugly to me, to be sticking your nose into other people's business, and to tell them who they ought to be trading with, when it's none of your business. So often you will hear the opponents of immigration say things like, well, we should be allowed to keep immigrants out of the country on the same principle that says I should be allowed to keep strangers out of my living room. It seems to me that this principle works exactly the opposite way.

I should be allowed to invite anybody in my living room who I want to, and if I want to invite a guy from Mexico City into my living room and he happens to have to cross your border on the way, you shouldn't have a right to stop me. And so I feel in so many ways that the anti-immigration view is an ugly one because it degrades the importance of people on the basis of where they were born, it ignores the poorest people in the world, and it involves this impulse to control other people's choices.

RF: Someone, of course, might say: "Why should I care what you find personally distasteful? As an economist, you have no greater insight about what should be viewed as ugly behavior than anyone else."

Steven Landsburg

➤ Present Position

Professor of Economics, University of Rochester

➤ Previous Faculty Appointment

Colorado State University (1989-1994)

➤ Education

Ph.D., University of Chicago (1979)

➤ Selected Publications

Author of *The Armchair Economist: Economics and Everyday Life*; *Fair Play: What Your Child Can Teach You about Economics, Values, and the Meaning of Life*; *More Sex Is Safer Sex: The Unconventional Wisdom of Economics*; *The Big Questions: Tackling the Problems of Philosophy with Ideas from Mathematics, Economics, and Physics*; and a textbook on price theory

Landsburg: I agree that, on one hand, these are not issues that I have any more expertise on than anybody else. On the other hand, I think that economics fosters a sense of compassion and a sense of caring about people, because in order to do economics well, you need to think about what people are maximizing, which means you need to think about what's important to other people, which means at some level you have to put yourself in other people's shoes. You have to think about what's going on in other people's lives, you have to think about what problems other people are facing, and to do economics well, you have to really think hard about that stuff, which is the first step toward caring about other people, and caring about other people's problems. So, on the one hand, this is not economics, but on the other hand, it's the kind of view that I think one is led to by doing economics, because economics does foster this insight into other people's problems, which leads to compassion.

RF: An issue where there seems to be a pretty wide gap between economists and noneconomists is population growth. Most economists seem to think that population growth is generally good for well-being while most noneconomists have doubts. Why do you think that is the case?

Landsburg: I'm not certain the anti-population growth argument is incorrect, but I am pretty sure it is. I think the reason people get this wrong is that the costs of population growth are very obvious and the benefits are less visible to the casual eye, and so people tend to do the cost-benefit analysis incorrectly because of that. The benefits of population growth come from the fact that the more people there are in the world, the more people you have to interact with, the more potential friends you have, the more potential mates, the more potential business partners, customers, employers, employees. But even more than any of that is the fact that we all free ride on each other's ideas. Virtually all of our prosperity comes from the fact that each generation free rides on the ideas of the previous generation, and improves on them — not just uses those ideas in and of themselves, but uses them to inspire the next generation of ideas. We use them to build on and to make the world a more prosperous place. A lot of that is invisible. You have all this technology around you and you tend to forget the fact that had there been half as many people, there would have been half as many ideas — probably fewer than half, in fact, because ventures actually inspire each other, so there's a more than linear buildup of ideas as the population grows.

I like to say that when you're stuck in traffic on a hot summer night, it's very easy to remember that the guy in front of you is imposing the costs, and, unfortunately, you also easily forget that the guy who invented air conditioning has conferred on you quite a benefit. You remember that if the guy in front of you had never been born, your life would be a little easier right now — but it's also easy to forget that if one less person had been born it might very well have been the guy who would've invented air conditioning, not the guy who's in front of you. So, the real way in which people get this wrong, I think, is that the mind immediately goes to the fact that there is such a thing as too large a population. And there is such a thing as a population so large that the earth cannot support it — we all know that. But that does not address the question of whether the current population is too large or too small. And somehow people often confuse one of those questions with the other. I'm not sure why, but I'm out to unconfuse them.

RF: What have you learned from writing your blog and the comments you receive from readers?

Landsburg: My readers are amazing. I am absolutely blown away by the brilliance of the commenters on my blog. I don't know where they came from, but they dazzle me every day with their commentary and insights. They pick my arguments apart, they force me to defend myself, and sometimes they force me to retreat, and sometimes they force me to rethink things entirely. I don't know any other blog where the quality of the discussion is as high as it is on mine. Even the other blogs that are certainly as smart as mine,

other blogs that are as entertaining as mine, don't get the quality commenters that I do, on average. And I feel extraordinarily blessed by that. These are people who will go deep into the heart of a logical argument and will insist that assumptions be clearly spelled out, insist that every step of logic will be clearly spelled out. We have very lively discussions there. It's almost a re-creation of what I used to have at lunch.

RF: Have any of those comments influenced arguments that you have made in subsequent published work?

Landsburg: Oh absolutely. I have recently revised *The Armchair Economist*, and much of the new material in there appeared first on my blog, and certainly the presentation in the book is vastly improved from what I've learned from my blog commenters. If things were unclear to my blog readers, I realized that I had to say them in a different way, and in many cases I found better ways of saying them from what I read in the blog comments. Blog commenters often pointed to aspects of the questions that I had failed to address, and I went back to expand on those things. There are many, many ways in which the new edition of *Armchair* has benefited tremendously from my commenters.

RF: Your Ph.D. is in mathematics. It's still relatively uncommon for people to have appointments in economics departments without formal training in the discipline, even though it's increasingly mathematical.

Landsburg: Well, when I was in graduate school in mathematics, I did write one paper in economics. And it was not a mathematical paper, it was an empirical paper. It appeared in the *Journal of Political Economy*. It was an exploration of the stability of tastes over time. I found evidence that at least in the United Kingdom, which was where all my data were from, that the tastes of consumers had been remarkably stable over the past hundred years. The results were very strong. That was no tribute to my skills; it was just what happened to be in the data. But because the result was so strong, it got a fair amount of attention, and it got published in a very prestigious journal, and that I think was the credential that got me started. I was offered a postdoctoral fellowship in economics at Chicago mostly on the strength of that paper, I think. And during the two years of the post doc was when I first started actually learning some economics.

RF: Which economists have influenced you the most?

Landsburg: Donald (now Deirdre) McCloskey first and foremost, who had such a tremendously unique and down-to-earth style of applying price theory to all human behavior, and sometimes to nonhuman behavior, with these beautiful little logical stories, where a few lines of reasoning led you to an amazingly surprising conclusion. I never took a course from McCloskey, but all my friends in graduate school who were in the economics department were all taking those courses and they were reporting back to me what they had learned. I was blown away. I was getting all those lectures secondhand, and I was transfixed by them. And then later on, when I had the opportunity to meet him, he was extraordinarily encouraging and really went out of his way to inspire me and to help me along. So that's number one.

I also got a lot of encouragement from Gary Becker. I got a lot of encouragement from George Stigler — at least at the beginning, although I think Stigler became a little disillusioned with me later on, because he thought, correctly, that I was still spending a lot of time thinking about math and he thought that given my employment I ought to be spending all my time thinking about economics. So he had a legitimate gripe. But earlier on he had been very encouraging, and prodded me along into thinking more and more about economics.

Bob Lucas was a huge inspiration. I always thought that Lucas was single-mindedly committed to following the truth wherever it led him. Whenever I spoke to him, whenever I saw him talk, I had the feeling that this was the most thoroughly honest man I had ever encountered. He just wanted to know what was true. He had no agenda. And, of course, he had this incredibly powerful mind and this incredibly powerful way of thinking about macroeconomics, which I found absolutely inspiring and brilliant and made me want to emulate him. And on a personal level, he, too, was exceptionally kind to me. I asked him to read the first attempt at a macroeconomics paper I had ever written. And, in retrospect, it was terrible. I should have been embarrassed to show it to him, but he was extremely kind and gentle about taking me through that paper, almost line by line. He spent far more time on it than any reasonable person would have spent. But he did it because he's a very kind and giving person, and I will appreciate that forever.

RF: What are your current or upcoming projects?

Landsburg: Well, I just signed a contract to write a one-semester economic principles book. That's a big one. And I have two clear visions for *Armchair*-like trade books, which I'm kicking around, but I don't think I'm ready to talk about either of those things yet. And then, the other thing that's taking more and more of my time these days is a website called mathoverflow.net, which has absolutely transformed the way mathematical research is being done in the world. It's a place where mathematicians, including many of the very best of the mathematicians in the world, go every day to talk about what they are working on, and to get help from other people. Stuff that you used to think about for six months before you could make progress, now you can post it on mathoverflow.net and somebody answers it within six hours. I'm spending a lot of time there, asking some questions, answering some questions, and just learning a fantastic amount of mathematics every day. **RF**

ECONOMIC HISTORY

Games People Play

BY CHARLES GERENA

How a major computer and video game cluster formed in rural central Maryland

On a quiet afternoon at Wegmans supermarket in Cockeysville, Md., groups of people bathe in the glow of their laptops while eating lunch at a café that overlooks the expansive supermarket. Some of those flickering screens belong to computer and video game developers on their lunch break; other developers favor a nearby Thai restaurant or grab a burger from Five Guys.

The Hunt Valley region of Baltimore County has been a center of activity for both developers and publishers in the entertainment software industry since the 1980s, when a fighter pilot with an MBA and a programmer decided to turn their love for games into a money-making enterprise. Hunt Valley became their headquarters because it was near their homes and office space was affordable. As the industry matured into a multibillion dollar business, most of the offspring of their company, MicroProse, remained in the region while other developers and publishers like Bethesda Softworks were established in Montgomery County about an hour's drive away.

For the programmers, artists, sound engineers, and other specialists who have to collaborate to produce a game, there are advantages to companies in the same industry locating in the same place, whether it's Silicon Valley or the rolling hills of Hunt Valley. Economists refer to these advantages as localization economies.

Also, the region provides an alternative to more urbanized hubs of the entertainment software industry like Los Angeles and Boston. While central Maryland has signs of suburbanization everywhere — a light rail line serves a recently redeveloped retail center and an office park where McCormick and Co. has a manufacturing facility — it has retained a lot of the rural character and quality of life that has kept people like Douglas Whatley here.

Not much has changed about Hunt Valley since Whatley moved here in 1990 to work at MicroProse. He now runs his own game development company, BreakAway Ltd. "It has always been an outpost where a few national companies set up outside of Baltimore," says Whatley. "But we are still right in the country. This is horse country with mostly farms."

A New Mass Medium

The earliest computer games have their origins at research universities and institutions. They were often byproducts of serious work being done by computer scientists.

For example, a programmer at the Massachusetts Institute of Technology, Steve Russell, used a minicomputer called the PDP-1 to develop one of the first widely played games — *Spacewar!* The game was so popular at an MIT science open house in 1962 that Digital Equipment Corp. included a copy with every PDP-1 it shipped.

Still, gaming was a labor of love, both for players and developers. You could play games only on certain computers, and those computers were many times more complicated to operate than the smartphones today's teenagers use to play *Angry Birds*.

If you made games, the distribution options were limited. You could copy your work onto floppy disks and peddle them at mom-and-pop stores and hobbyist conventions. Or, you could post games on online forums

A stack of MicroProse's software titles sits in the offices of Firaxis Games, one of MicroProse's successful offspring.

PHOTOGRAPHY: CHARLES GERENA

frequented by computer hobbyists, as Whatley did. While working as a programmer in the financial industry, he started developing freeware games on the side and posted them on the CompuServe and AppleLink online services.

The entertainment software industry wouldn't become a mass medium until technological platforms for playing games became more standardized and user-friendly and until distribution channels appeared. A college student's encounter with *Spacewar!* proved to be a pivotal moment in this evolution.

Nolan Bushnell saw the game running on a PDP-1 while attending the University of Utah, a center of computer science research. Bushnell became obsessed with finding a wider audience for it. After graduating in 1969, he built and marketed a coin-operated version called *Computer Space* for college campuses and bars starting in 1971.

The game was a commercial failure because, while it was novel and looked futuristic, it was hard to play. The company Bushnell co-founded in 1972 — Atari — would make its mark selling simpler arcade games like *Pong*. Later, he brought *Pong* into people's living rooms in the form of a device that could be connected to a television set.

But first, Magnavox beat Atari to the home video game market by introducing its system, the Odyssey, in August 1972. Fairchild Semiconductor followed four years later with the first system to use interchangeable game cartridges.

"This was the first real experience that the public had with a computer or an electronic toy," explains Christopher Melissinos, former chief gaming officer at Sun Microsystems and curator of a recent exhibition on the history of computer and video games at the Smithsonian American Art Museum. "You can trace the adoption of [home] computers to these first home video game machines."

Once the Odyssey and *Pong* came out, says Melissinos, "it was a quick acceleration from that point forward." In October 1977, Atari released its Video Computer System, known later as the Atari 2600, which could be produced more cheaply than rival systems and used a joystick on a base. The system provided a simple but flexible platform that could reach a mass audience. "Designers, through their ingenuity, were able to bend the machine to do things that its creators never thought possible," notes Melissinos.

As a result, the market became flooded with new games for the Atari 2600, as well as for subsequent cartridge-based systems like ColecoVision and Intellivision. The sudden influx almost killed the industry. Parents faced a wall of games to buy for their children and had no idea which ones were good or bad by looking at the boxes.

"All of these businesses jumped in and created games that were terrible," says Melissinos. "There were no standards around advertising or describing what the games were."

By the early 1980s, consumers started walking away from home video game systems, right around the time that more powerful personal computers like the Commodore 64, Apple II, and Radio Shack's TRS-80 offered a way both to play games and to use other productivity software like word processors. "The bottom fell out of the market," says Melissinos. "A lot of people assumed that video games were just a fad."

That didn't turn out to be the case. Nintendo entered the U.S. market in 1985 with its video game system. Thanks to the popularity of games like *Super Mario Brothers*, the company revived the video game side of the entertainment software industry. To ensure quality control, Nintendo signed licensing agreements with game publishers and added a security chip to its system to lock out unlicensed cartridges. Sega introduced its video game system in 1986 based on the same business model.

Clustering in Horse Country

As the entertainment software industry worked through its growing pains in the 1980s, clusters formed where the most successful game developers and publishers were headquartered. Spinoffs spread the expertise of these firms, serving as fertilizer that helped the industry take root.

Northern California's video game cluster can be traced back to the establishment of publishers like Electronic Arts, which released blockbusters like *The Sims* and *Rock Band*. Seattle's cluster has its origins in Nintendo of America and Microsoft, publisher of *Flight Simulator* and producer of the Xbox. In Austin, Texas, the cluster began with Origin Systems, which was founded in 1983 and produced the *Ultima* and *Wing Commander* franchises.

In Maryland, two computer game development companies established the East Coast roots of the entertainment software industry. Bethesda Softworks was founded in 1986 by Christopher Weaver, an MIT-trained computer scientist. The company's initial claim to fame was the introduction of sports games that relied on real-world physics to determine the outcome, not a set of rules based on stat books. It also released several popular role-playing games for both computers and video game systems, including *Elder Scrolls*, before being absorbed into ZeniMax Media, which is based in Rockville, Md., and has offices in Hunt Valley.

MicroProse began in 1982 with $1,500 in startup money and an office in Sid Meier's basement. Meier had moved to Hunt Valley from Detroit to work as a programmer at General Instrument. Developing code for cash register networks during the workday, he played and created games on the side. During a trip to Las Vegas, Meier played a flight simulator arcade game with his friend Bill Stealey, a former Air Force pilot who worked in General Instrument's business development department. Meier managed to beat Stealey by figuring out how the game worked.

Could they build a more challenging game that was also fun to play? The duo decided to find out.

MicroProse started out small. At first, Meier and Stealey focused on combat flight simulators and military strategy games for early PCs like the Atari 800 and Commodore 64, distributing them on disks stuffed into baggies. Eventually, MicroProse would release several best-selling and critically

acclaimed games, including *Railroad Tycoon* in 1990 and *Civilization* in 1991.

By that time, startups had begun spinning off from MicroProse as people left the company. Former developers founded Firaxis Games, Big Huge Games, and BreakAway, while a former executive started testing firm Absolute Quality. Other firms opened to take advantage of MicroProse's talent pool, including Day 1 Studios.

The Power of Clustering

MicroProse may have yielded a bumper crop of offspring, but something else sustained the area's game development ecosystem to help those companies survive. In Maryland, "we have a lot of government and Department of Defense money that funnels into here" from places like the National Security Agency and the Aberdeen Proving Ground, says Whatley of BreakAway. "When we had downtimes, we were able to get contracts to do work for them."

In addition, Uncle Sam has been a source of talent for central Maryland's gaming cluster. "A lot of us drew people out of the government," notes Whatley. "If there was a really hot programmer that was working at the National Security Agency and got bored with that and wanted to work in the games, we could snap him up easily."

There are other advantages of having game developers clustered in one area, such as Baltimore County and Montgomery County. The agglomeration of firms in a similar industry yields localization economies, in contrast to urbanization economies that result when any group of companies cluster in one place.

Localization economies come in three flavors. First, there are knowledge spillovers. While computer programmers tend to do their best brain work independently, they also benefit from being near others who can serve as sources of collaboration, inspiration, and market information.

Mathijs de Vaan, a Ph.D. fellow in Columbia University's economic geography department, studies the beneficial effects of social networks — not the Facebook variety but the kind that form between members of the same creative team or within the same industry. DeVaan has recently focused his attention on the entertainment software industry. "Technology products such as a video game contain a lot of ideas," he describes. "In order to generate those ideas, face-to-face contact and exposure to diverse groups of individuals are important."

In the case of Hunt Valley, lots of game developers reportedly moved to the region to get the chance to work with Meier and Stealey. They continue to be mentored by former MicroProse employees today.

Labor pooling is another localization economy that can occur when an industry cluster forms. "A successful company can hire the workers from an unsuccessful company," says William Strange, a professor of real estate and urban economics at the University of Toronto. This is good for both sides of the job market. "Workers benefit from having a stable demand for their labor. Firms benefit from being able to expand when they need to."

Bryan Reynolds is a good example of someone who has hopscotched from one game developer to another without leaving Baltimore County. Reynolds started with MicroProse, left the company with a bunch of other people to form Firaxis Games in Sparks in 1996, then left that company to co-found Big Huge Games in Timonium four years later. He now designs online games for Zynga East in Timonium.

When new talent is attracted to a region with employment opportunities, that's another benefit of labor pooling. The cluster of game developers in Hunt Valley has attracted students from The Maryland Institute College of Art in Baltimore. Over the last decade, according to Doug Whatley, the region has also lured back students who had moved out west to work at software and game developers.

The advantages of labor market pooling are especially acute when the work requires specialized knowledge. In the early days, computer and video games were crude enough such that the developers did all the things needed for the game, from composing the music to designing the backgrounds. Each leap in technology has given developers new tools to create richer environments for players, pushing the limits of storytelling and audience engagement. This has required a unique skill set that includes equal parts of creativity and math.

"Game development requires both left-brain and right-brain skills," says Deborah Solomon, coordinator of the computer gaming and simulation program at Montgomery College and a former game developer for the National Oceanic and Atmospheric Administration. "Companies like to hire people that have not just the programming skills but the creative design skills."

At the same time, as games have become more sophis-

The Art of Video Games ***exhibition in Washington, D.C., highlighted milestones in the design of games like*** **Super Mario Brothers,** ***which helped the industry recover from a mid-1980s slump.***

PHOTOGRAPHY: *SUPER MARIO BROTHERS 3*, SHIGERU MIYAMOTO, TAKASHI TEZUKA, HIROSHI YAMAUCHI, DIRECTORS; SATORU IWATA, EXECUTIVE PRODUCER; KONJI KONDO, COMPOSER. NINTENDO ENTERTAINMENT SYSTEM, 1990. NINTENDO OF AMERICA, INC.

ticated and complex, there has been greater specialization and dispersion of tasks in the entertainment software industry. According to Solomon, large game development teams may require programmers that aren't involved in the design. For example, someone may be needed just to develop and run the database that stores the inventory of items that players have accumulated in an online role-playing game.

The sharing of specialized inputs is the third type of localization economy. That may be less important in the game industry, however, than in some other industries, according to Strange. "It's not obvious to me what inputs would be shared." He suspects they may use the same lawyers or accountants, but neither is particularly geared toward the entertainment software industry.

Game developers occasionally fill holes on their development teams by hiring specialists in areas like sound production or graphics rendering. But such outsourcing doesn't happen often. At both BreakAway and Firaxis, the back-and-forth of the creative process works better when everyone working on a project is in the same office.

The Future

The entertainment software industry appears to have come full circle. Now that individual game developers can submit their work for posting on Apple's App Store or Google Play, they can attract a following like Doug Whatley did when he posted games on CompuServe decades ago.

As a result, a number of smaller, independent companies have popped up, says Solomon. "It's like a new renaissance of the small indie game companies, kind of like it was the 1970s and '80s."

Game developers have come full circle in another way, according to Whatley. Developers that used to test their products on multiple configurations of IBM's PC are now doing the same thing for smartphones and tablets that run on multiple operating systems. "It's all played out before," he adds.

These changes will keep central Maryland's game developers and publishers on their toes. Some firms may contract while others may expand. So far, the region's cluster has held up. Big Huge Games shut down last May and could have left about 100 people out of work. Instead, many of them have been employed by Impossible Studios, a new outfit opened in Hunt Valley by Cary, N.C.-based Epic Games in August 2012.

"It is one of the most exciting and also one of the most frustrating things about game development — it's never the same," says Solomon. **RF**

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VOCATIONAL EDUCATION *continued from page 19*

Though questions remain about whether vocational or general education yields more benefits to the individual and the economy, it's not an either-or, but a dual system. As Gill of the Chesterfield Technical Center notes, "If a student wants to go to work, we help them, but we want them to go on and get as much education as possible." That higher education includes not only four-year colleges but also trade, technical, and community colleges. "We want students to broaden their skill set and certifications."

Garcia, the automotive technician, is 26 now. The apprenticeship got him started, and now he's back in school while still working, earning his associate's degree in mechanical engineering because he'd like to work at the corporate level at Toyota or Lexus.

He's adding to his skill portfolio. Probably not for the last time. **RF**

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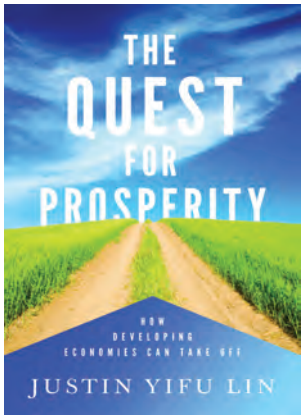


BookReview

Putting Planning Back In

THE QUEST FOR PROSPERITY
BY JUSTIN YIFU LIN
PRINCETON, N.J.: PRINCETON UNIVERSITY PRESS, 2012, 257 PAGES

REVIEWED BY DAVID A. PRICE

"How quickly can Burundi reach Switzerland's level of development?" asks Justin Yifu Lin, former chief economist of the World Bank. His answer in *The Quest for Prosperity* is that it can happen swiftly indeed, within one or two generations — if the government follows the right policies.

It's not clear whether he means literally that Burundi's per capita GDP of $275 can match Switzerland's $83,073. But economic development has yielded surprises before: As Lin notes, development economists in the 1960s widely believed that African economies had better prospects for development than those of East Asia.

Two generations later, we know that what actually happened was the opposite. Influenced in part by Western development economists, postwar economic development in Africa, both above and below the Sahara, began as comedy — with the belief that Soviet planning was a good model for creating prosperity — and ended in tragedy. Many other countries worldwide adopted a similar model and fell victim to the same fate. "Instead of converging to the developed countries' incomes," Lin observes, "those in developing countries stagnated or even deteriorated, and those countries' income gap with developed countries widened."

Lin's project in this book is to glean lessons from the success stories, such as the fast-growing East Asian countries — among them the Republic of Korea, Japan, Singapore, and now the People's Republic of China — and from other countries that are now successfully developing, such as India and Chile. (To be sure, some of these countries, particularly China, India, and Chile, are developing highly unevenly, with large segments of their populations remaining impoverished.) His resulting framework is a synthesis of the so-called Washington consensus of the 1990s and early 2000s, which embraced free markets and eschewed central planning, with the postwar development model, known as structuralism. ("Washington" here refers to Washington-based development institutions rather than United States policy, though the two may overlap.)

Lin's "new structuralist economics" gives free markets a primary role in allocating resources, but also sees a necessity for national governments to pick industries and support them as a condition of rapid growth. In short, he wants the P word, planning, to be respectable again.

Some of the forms of targeted government intervention that he advocates are modest in scope, such as improvements to electricity, telecommunications, and transportation infrastructure that may be industry-specific. But he argues that policymakers should go further in view of what he regards as the externalities inherent in pioneering a new industry within a country. Pioneering firms, he writes, must "overcome issues of limited information about which new industries are consistent with the economy's latent comparative advantage."

Moreover, he contends, intervention is needed to bring about geographical clustering within an industry, which, in turn, yields agglomeration benefits such as information-sharing and a pool of specialized labor. "If industrial upgrading and diversification are left to random spontaneity, firms may enter too many different industries," he argues. "As a result, only a few sufficiently large clusters may emerge."

Lin's brief for industrial policy in the context of development economics raises much the same arguments, pro and con, that debates over industrial policy have dealt with since the 1980s. For Lin to convince the unconverted, he needs to accomplish three things, at least, and *The Quest for Prosperity* doesn't succeed at them. First, he does not show that the success stories in East Asia and elsewhere are success stories of industrial policy rather than success stories of liberalized markets or broad-based infrastructure improvements. It would take a detailed analysis to disentangle the effects of these influences, an effort that Lin does not undertake in his largely anecdotal narrative.

Second, Lin fails to establish that national governments can overcome "issues of limited information" where private investors and entrepreneurs cannot. He contends that a policymaker need only look at growing countries with comparative advantages similar to those of his own country, and with a higher per capita income, and target those countries' steadily growing tradable industries. But if it's that easy, why can't the private sector do it?

Finally, he does not make the case that national leaders can generally be trusted to favor selected industries on their merits rather than on the basis of cronyism or political appeal. He writes that government leaders and officials, in his experience, are "motivated by the genuine desire to do something good for their people." Perhaps so. But what would the corrupt ones do — confide in the World Bank that their real ambition was to send millions of dollars to their secret bank accounts?

Although *The Quest for Prosperity* might not convince the neutral reader, let alone the skeptical, it is a readable introduction to a moderately more interventionist perspective on development economics. **RF**

Shadow Inventory and Foreclosure Law in the Fifth District

BY SONYA RAVINDRANATH WADDELL

In 2008, the state of Maryland passed a series of measures expanding the role of the judicial system in the foreclosure process. This, some have argued, changed the course of the housing recovery for Maryland: Requiring lenders to go through the courts to foreclose takes longer, so the law enables delinquent homeowners to stay in their homes longer after defaulting, which, in turn, slows the correction in the housing market. Others have argued that allowing homeowners to stay in their homes longer gives them time to recover financially and find a way to emerge from default, perhaps through a loan modification. Does requiring a judicial process to foreclose increase the time that a borrower spends in foreclosure? If so, does it increase the likelihood that a homeowner will be able to stay in their home, and what are the effects on the broader economy?

In the Fifth Federal Reserve District — an area comprising the District of Columbia (D.C.), Maryland, North Carolina, South Carolina, Virginia, and most of West Virginia — large, mainly suburban, parts of the Washington, D.C., metropolitan statistical area (MSA) were hit particularly hard. Because the counties in this MSA faced similar housing conditions in the early part of the downturn and because this MSA includes counties in Maryland and Virginia — two states with remarkably different approaches to foreclosure regulation — it is possible to use the region to better understand the dynamics of the housing recovery. We can analyze the extent to which the regulatory system surrounding foreclosure correlates to longer foreclosure timelines and affects the inventory of homes in delinquency or foreclosure in this region and throughout the Fifth District. Consistent with the existing literature, an analysis of Fifth District data indicates that certain regulatory regimes are correlated with longer foreclosure timelines and higher inventories. The consequences for the borrower and the implications for the housing recovery, however, are not yet well understood.

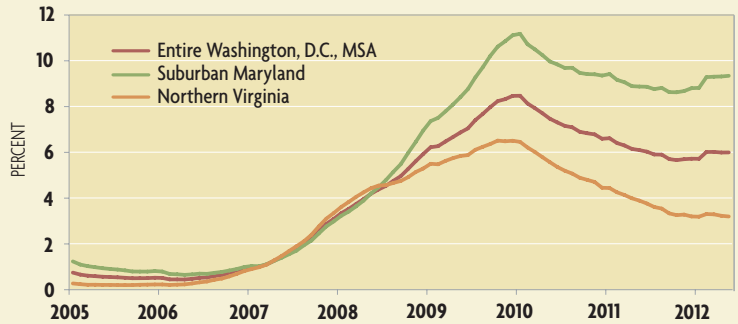
Shadow Inventory in the D.C. Area

Much of the discussion of the housing recovery has centered on the idea of a "shadow inventory of homes," those that are in serious delinquency or foreclosure and therefore are likely soon to be bank-owned. The shadow inventory is important because it is part of the excess inventory of homes that the market must work through before a strong housing recovery that includes new construction is likely. Analysis using data from Lender Processing Services Applied Analytics (LPS) indicates that the shadow inventory, which is defined as the share of homes that are in foreclosure, owned by the lender (real estate owned, or REO), or with mortgage payments 90 days or more past due, is higher in the Maryland suburbs of Washington, D.C., (often referred to as "suburban Maryland") than in the Virginia suburbs ("Northern Virginia"). Until around the middle of 2008, shadow inventories were similar in Northern Virginia and suburban Maryland, but from 2008 to 2010, the shadow inventory grew much more rapidly in suburban Maryland — and then from 2010 to 2012, it fell much more slowly. (See chart.) By the end of 2011, the shadow inventory in Northern Virginia was back to its 2008 level, while the suburban Maryland shadow inventory remained much more elevated.

Why has the shadow inventory stayed high in suburban Maryland? An increased shadow inventory must be either the result of more homes entering default or the result of delinquent borrowers spending a longer time in default. The data indicate that in the past few years, the latter has been the primary driver of elevated foreclosure inventory. Although there are still a large number of homeowners defaulting on their loans by historical standards, these numbers have generally been falling in the Washington, D.C., MSA and across most of the Fifth District and the nation.

On the other hand, foreclosure timelines in the Washington, D.C., MSA started to increase in the beginning of 2007, and rose sharply in 2008. This corresponds with the expansion in the shadow inventory. Foreclosures that were initiated through 2006 tended to remain in foreclosure for an average of two months in suburban Maryland and Northern Virginia. By the end of 2010, however, a loan that entered foreclosure in suburban Maryland would stay in foreclosure for about nine months, while foreclosure timelines in Northern Virginia extended to about six months on average. Importantly, these data understate the

Shadow Inventory in the Washington, D.C., MSA
(Percent of Mortgage Inventory)



SOURCES: LPS Applied Analytics, Federal Reserve Bank of Richmond

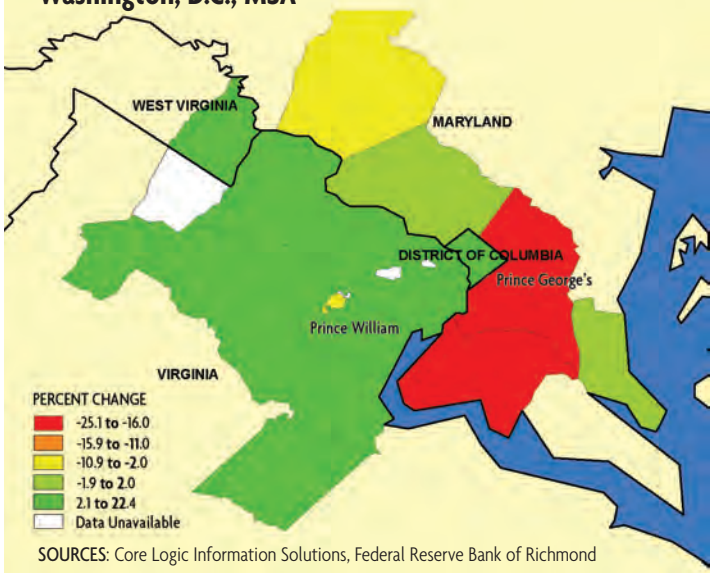
total time to foreclose, since a percentage of the loans used to calculate the timeline were still in foreclosure by July 2012, or the end of the data set at the time of analysis. This is particularly true in suburban Maryland. For example, of the foreclosures initiated in suburban Maryland in January 2011, almost 40 percent were still in foreclosure as of July 2012. In Northern Virginia, however, only 13 percent were still in foreclosure as of July 2012. The time in foreclosure represents only part of the increase in the timeline from default to home sale. Borrowers spend a longer time in delinquency as well. Loans that entered 90-day delinquency in January 2005 spent a little under three months in delinquency in Northern Virginia and a little over three months in suburban Maryland. By the middle of 2009, loans in suburban Maryland were spending almost eight months in 90-day delinquency and in Northern Virginia, about six months.

In sum, shadow inventories in the Washington, D.C., MSA continued to rise well into 2010, even as foreclosure starts came down, primarily because the time it takes to move from delinquency to foreclosure and the time in foreclosure lengthened. Furthermore, shadow inventories and time to foreclose in suburban Maryland are further from pre-recession levels than those in Northern Virginia.

By some measures, the recovery in suburban Maryland has been slower than that in Northern Virginia. From 2009 to June 2012, most counties in Northern Virginia reported house price increases, while houses in the Maryland suburbs generally continued to depreciate. (See map.) For example, although Prince William County, Va., and Prince George's County, Md., both saw a sharp downturn in house prices, home values in Prince William County turned around in the middle of 2009 and by June 2012 had grown more than 25 percent. Meanwhile, Prince George's County home values continued to depreciate and then remained virtually stagnant.

The judicial foreclosure process observed in the Maryland suburbs of D.C. is not the only difference between that region and its Virginia counterpart. But could regulation be playing a role in the longer foreclosure timelines and the slower recovery?

Change in House Prices from Jan. 2009 to June 2012
Washington, D.C., MSA



SOURCES: Core Logic Information Solutions, Federal Reserve Bank of Richmond

The Role of Foreclosure Law

When a borrower fails to make timely payments on the mortgage, the mortgage is considered in default. Once a loan is in default for some period of time, a lender can start foreclosure proceedings. How a lender initiates foreclosure proceedings depends upon the state in which the property resides. In some states, a foreclosure must be carried out through the court system (a judicial process). A small number of states rely solely on nonjudicial (also called "power of sale") proceedings. Other states offer both judicial and nonjudicial processes. In the states that offer both, lenders generally use the nonjudicial process — so those states are, in effect, nonjudicial states. According to RealtyTrac, 20 states are judicial states and require a judicial process, 26 states are nonjudicial states and have both processes, and four states and the District of Columbia have only a nonjudicial option for foreclosure.

Nonjudicial processes are usually simpler, quicker, and less costly. The fact that judicial foreclosure enables a borrower to spend more time in foreclosure is well documented. One argument for a longer foreclosure process is to give borrowers more opportunities to find solutions before a foreclosure sale. In a 2011 article in the *Journal of Policy Analysis and Management*, J. Michael Collins of the University of Wisconsin-Madison, Ken Lam of the Federal Housing Finance Agency, and Christopher E. Herbert of Abt Associates Inc., found that judicial processes are associated with a 3 percent marginal increase in loan modifications. They argued that the longer timeline allows borrowers the opportunity to work with lenders, and it provides lenders greater incentive to modify loans since the longer foreclosure process is more costly to them.

On the other hand, a 2008 article by Anthony Pennington-Cross of Marquette University in the *Journal of Real Estate Finance and Economics* found that judicial foreclosure proceedings led to lower foreclosure and cure completion rates. In other words, slower foreclosure proceedings seemed to have simply encouraged borrowers to remain in default. In 2011, Kristopher Gerardi of the Atlanta Fed, Lauren Lambie-Hansen of the Massachusetts Institute of Technology, and Paul Willen of the Boston Fed also argued that although judicial foreclosure proceedings delay foreclosure, they do not, on average, avert it. These researchers found that a year after a borrower entered serious default, lenders had auctioned off only 14 percent of properties in judicial states compared to 35 percent in power-of-sale (or nonjudicial) states. Borrowers were neither more nor less likely to become current on a mortgage. Judicial intervention, therefore, succeeds only in temporarily reducing foreclosure by increasing the incidence of persistent delinquency. In short, although it seems clear that judicial states have longer foreclosure processes, research has reached inconsis-

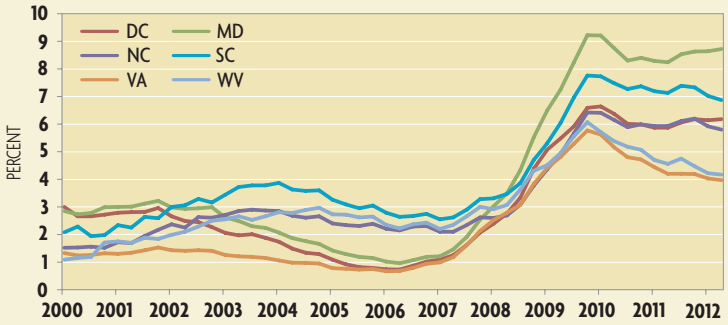
tent conclusions regarding the effects on the borrower.

Of course, identifying a state as judicial or nonjudicial does not tell the whole story of the role of foreclosure regulation there. Other requirements can affect the foreclosure process. For example, Gerardi, Lambie-Hanson, and Willen examined a "right-to-cure" law in Massachusetts that blocks lenders from starting foreclosure proceedings for 90 days after a borrower defaults on a loan; they found that the right-to-cure law lengthens the foreclosure timeline but does not ultimately keep borrowers in their homes. Within the Fifth District, only North Carolina has such a law (with a 45-day period), according to reports of the National Consumer Law Center, or NCLC, a Boston-based nonprofit advocacy group.

One of the most far-reaching limitations on foreclosures, short of an outright moratorium, is a rule in some states allowing foreclosed homeowners to avoid losing their homes even after the foreclosure sale. This right is known as a statutory right of redemption. While laws vary, the right typically allows individuals who lost their homes to foreclosure to repurchase them for the foreclosure sale price plus foreclosure expenses up to one year after foreclosure. Any purchaser of the home at foreclosure must wait for that period before knowing whether the sale will become final, and the foreclosed homeowner is able to remain in the home in the meantime. Collins, Lam, and Herbert argue that although borrowers rarely exercise a right of redemption, its existence could reduce demand for foreclosed homes and could lower the sale price a lender can get for the home or add to the cost of foreclosure. Therefore, a right of redemption may provide a greater incentive for lenders to seek alternatives to foreclosure and to extend the default timeline to allow homeowners more time to explore potential solutions. According to the NCLC, in the Fifth District only North Carolina provides a right of redemption during a 10-day period after the foreclosure sale.

Allowances such as rights of redemption, right-to-cure laws, and the lender's right to recourse muddy the waters when trying to distinguish the effect of judicial versus nonjudicial requirements on borrowers and lenders. Some of these regulations and requirements come into play in Fifth District states.

Shadow Inventory in the Fifth District



SOURCES: Mortgage Bankers Association, Haver Analytics

Foreclosure Law, Timelines, and Shadow Inventory

If housing markets in the Fifth District are consistent with the literature, we would at the least expect to see states that require judicial proceedings to have longer foreclosure timelines and, therefore, higher shadow inventories. Judging by the experience in the suburbs of Washington, D.C., documented above, we would also expect to see house prices in those states recover more slowly.

Shadow inventories have certainly grown across the Fifth District in recent years. Using Mortgage Bankers Association (MBA) data and defining the shadow inventory as loans that are at least 90 days delinquent or in foreclosure, the shadow inventory in the region expanded fourfold from the beginning of 2007 to the end of 2010. (See chart above.) South Carolina long had the highest shadow inventory rate. Starting in 2008, however, Maryland's shadow inventory began to grow notably from 1.2 percent of all mortgages in the first quarter of 2007 to 9.2 percent of mortgages in the fourth quarter of 2009. West Virginia saw the smallest increase, with the rate rising from 2.2 percent to 6.1 percent.

As in suburban Maryland and Northern Virginia, this increase in the shadow inventory was driven by an increase in the time that a borrower stays in default. Foreclosure starts remained steady in 2009 and 2010, or even fell slightly. But across the Fifth District, loans now spend more time in foreclosure. Maryland's timeline stretched the most. Loans that started the foreclosure process in Maryland anytime through early 2007 spent less time in foreclosure than any other state, except perhaps Virginia. By the middle of 2008, however, Maryland was up with South Carolina for some of the longest foreclosure timelines in the District. (See chart at the top of page 47.)

Furthermore, the timelines are most likely to be biased downward in Maryland, South Carolina, and D.C. by virtue of the data set ending in July 2012 with many foreclosures still in process. (The cutoff in the number of months that a loan could be in foreclosure entirely explains the decline in foreclosure timelines starting in 2011. The most extreme case is the timeline for foreclosures initiated in July 2012 when, by definition, the loans in any state could only be in foreclosure for up to one month.) Maryland, South Carolina, and D.C. consistently have the highest share of loans that are still in foreclosure for any given month of a foreclosure start.

For example, loans that went into foreclosure in January 2011 in D.C. stayed in foreclosure for an average of 11 months — but more than 44 percent of those loans were still in foreclosure as of July 2012, the last month of the analysis. (See adjacent chart.) Similarly, in Maryland, the time in foreclosure for loans originated in January 2011 was nine months, and in South Carolina, the number was 8.6 months; however, 40 percent and 27 percent of those loans were still in foreclosure, respectively, in July 2012. In contrast, the time to foreclose in Virginia for loans originated in January 2011 was 5.2 months and only about 12 percent of them were still in foreclosure at the end of our

data; therefore, the underestimation of the Virginia timeline is likely to be less severe.

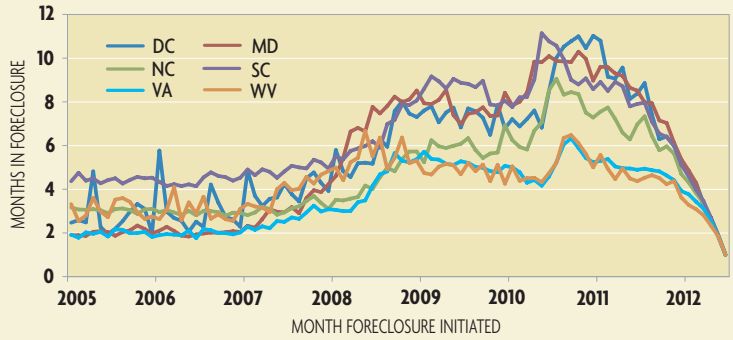
In the Fifth District, two states rely on judicial foreclosure proceedings: Maryland and South Carolina. Maryland's judicial foreclosure process became law in April 2008; prior to that time, foreclosures in Maryland were usually subject to a nonjudicial or less-judicial process. Lenders in North Carolina, Virginia, West Virginia, and D.C. generally rely on nonjudicial proceedings to foreclose. In other words, in the Fifth District, judicial proceedings do seem to be associated with longer foreclosure timelines and higher levels of shadow inventory, as evidenced by Maryland and South Carolina.

Although no Fifth District state has a statutory right of redemption apart from the highly limited one in North Carolina, the relevance of other regulations and requirements is illustrated by conditions in the District of Columbia. Its foreclosure timeline and shadow inventory level were affected by a December 2010 requirement that lenders provide information to borrowers about foreclosure mediation before foreclosing on their home. If the borrower chooses to go through mediation, the lender must participate in the negotiation. This requirement has notably increased foreclosure timelines. Other jurisdictions in the Fifth District have also instituted additional requirements on lenders and borrowers that have served, both intentionally and unintentionally, to lengthen the time that borrowers spend in foreclosure.

In addition, there are many reasons why foreclosure and delinquency timelines have lengthened across the Fifth District (and the country) in the past few years that are not regulatory in nature. For example, staff responsible for processing paperwork have struggled to keep up with the increased responsibilities brought on by the increased number of homeowners facing default. Some lenders voluntarily adopted brief moratoriums on judicial foreclosures in response to allegations that their employees and employees of servicers had engaged in "robo-signing"— that is, signing foreclosure documents certifying that they had verified certain items when they had not.

Nonetheless, consistent with the findings of the literature, the Fifth District's judicial states — Maryland and South Carolina — do have longer timelines and higher shadow inventories than its nonjudicial states.

Average Number of Months in Foreclosure



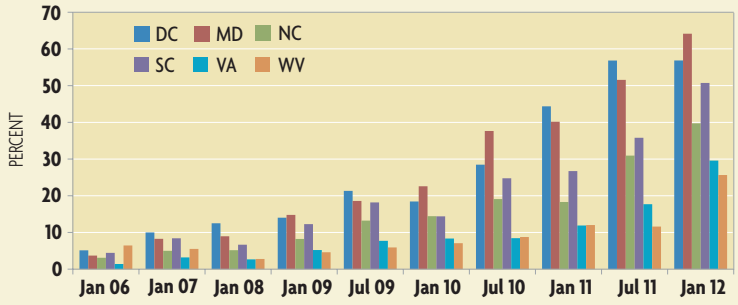
SOURCES: LPS Applied Analytics, Federal Reserve Bank of Richmond

The Housing Recovery in the Fifth District

But have these elongated foreclosure timelines and the elevated shadow inventory adversely affected the housing market recovery in Maryland and South Carolina? At the state level, the primary gauge for housing markets is house prices, and there is no strong evidence that house prices are taking longer to recover in Maryland or South Carolina than they are in other comparable areas of the District. According to the FHFA house price index, Maryland did see home values depreciate more rapidly than Virginia in the past four years, but it also experienced a sharper appreciation in the five years before the recession. House price movements in North and South Carolina have been remarkably similar. The CoreLogic house price index — which includes a wider share of the mortgage market — provides comparable results, with Virginia recovering somewhat faster than Maryland in recent years, and the North and South Carolina house price recoveries similar, albeit slightly more volatile in South Carolina. Furthermore, analysis of the LPS data indicates that 90-day delinquent mortgages in South Carolina and Maryland are no more or less likely to enter foreclosure than those in other Fifth District states. The timelines might have increased but the outcomes do not seem to be remarkably different.

When we focus on the suburbs in the Washington, D.C., metro area, however, Northern Virginia counties, such as Prince William County, are working through the foreclosure inventory more quickly and the housing market seems to be recovering more robustly than in Prince George's County or other suburban Maryland counties. This result suggests that differing foreclosure regimes of the two states can indeed affect the paths of housing recoveries. At the same time, many Virginia housing counselors and homeowner advocacy groups argue that the housing crisis has been extremely difficult for families in counties like Prince William. Whether allowing people to stay in their homes longer creates an easier environment to find the best solution for borrower and lender is still unclear. But these are the trade-offs that policymakers must consider when proposing changes to how a state determines a foreclosure process. **RF**

Percent of Loans Still in Foreclosure as of July 2012
(By Month of Foreclosure Start)

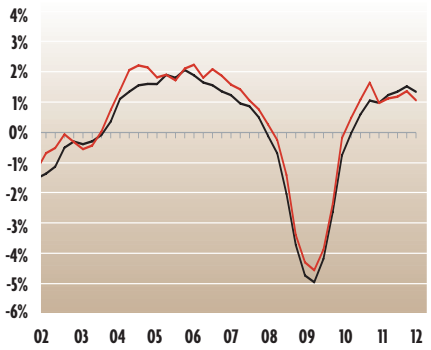


SOURCES: LPS Applied Analytics, Federal Reserve Bank of Richmond

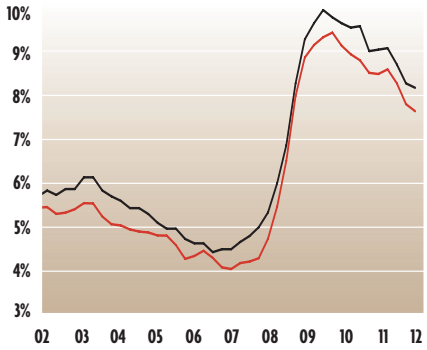
State Data, Q2:12

	DC	MD	NC	SC	VA	WV
Nonfarm Employment (000s)	**737.2**	**2,576.1**	**3,952.2**	**1,852.0**	**3,720.7**	**758.0**
Q/Q Percent Change	0.2	-0.3	-0.1	0.1	0.3	-0.6
Y/Y Percent Change	1.6	1.5	0.6	1.0	1.2	1.0
Manufacturing Employment (000s)	**1.1**	**111.5**	**436.3**	**222.5**	**229.5**	**48.1**
Q/Q Percent Change	6.7	0.4	-0.2	0.6	0.6	-1.6
Y/Y Percent Change	3.2	-1.6	0.4	3.5	-0.5	-2.8
Professional/Business Services Employment (000s)	**151.1**	**407.2**	**518.1**	**235.0**	**665.3**	**63.5**
Q/Q Percent Change	-0.2	0.2	0.3	3.6	-0.3	-0.1
Y/Y Percent Change	1.5	3.2	1.1	2.0	0.1	2.3
Government Employment (000s)	**246.2**	**508.3**	**701.3**	**340.9**	**716.1**	**152.6**
Q/Q Percent Change	0.1	-0.3	-0.1	0.3	0.1	-1.4
Y/Y Percent Change	-1.2	0.5	0.8	0.3	0.8	1.8
Civilian Labor Force (000s)	**352.0**	**3,085.9**	**4,661.9**	**2,151.8**	**4,339.4**	**804.6**
Q/Q Percent Change	1.2	0.1	-0.5	-0.2	-0.1	0.2
Y/Y Percent Change	2.5	0.6	0.3	-0.3	1.1	0.8
Unemployment Rate (%)	**9.3**	**6.8**	**9.4**	**9.1**	**5.6**	**6.9**
Q1:12	9.8	6.5	9.9	9.1	5.7	7.1
Q2:11	10.2	7.1	10.5	10.4	6.2	7.9
Real Personal Income ($Mil)	**40,825.2**	**264,657.4**	**311,797.9**	**139,677.3**	**333,313.4**	**55,190.8**
Q/Q Percent Change	0.9	0.7	0.8	0.9	0.9	0.7
Y/Y Percent Change	1.8	2.0	1.8	1.5	1.7	1.2
Building Permits	**996**	**3,321**	**12,109**	**5,485**	**6,857**	**584**
Q/Q Percent Change	283.1	10.3	8.8	24.2	4.3	52.1
Y/Y Percent Change	38.9	18.6	39.6	32.7	25.6	27.0
House Price Index (1980=100)	**578.3**	**401.8**	**298.3**	**302.7**	**391.2**	**214.5**
Q/Q Percent Change	0.4	-1.7	-1.5	-1.1	-1.2	0.5
Y/Y Percent Change	1.7	-1.3	-2.1	-1.2	-0.9	1.5

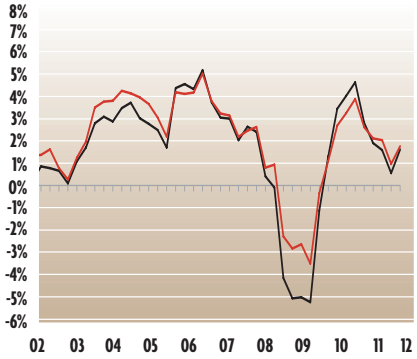
Nonfarm Employment
Change From Prior Year
First Quarter 2002 - Second Quarter 2012



Unemployment Rate
First Quarter 2002 - Second Quarter 2012

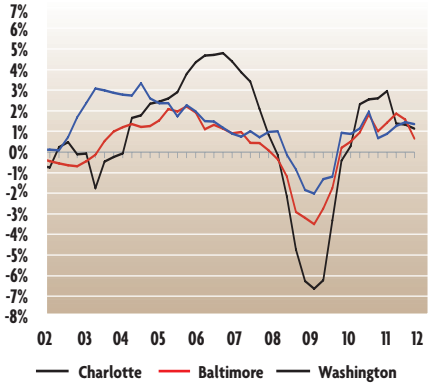


Real Personal Income
Change From Prior Year
First Quarter 2002 - Second Quarter 2012

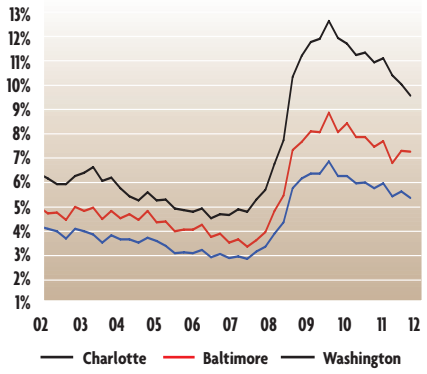


Fifth District — United States

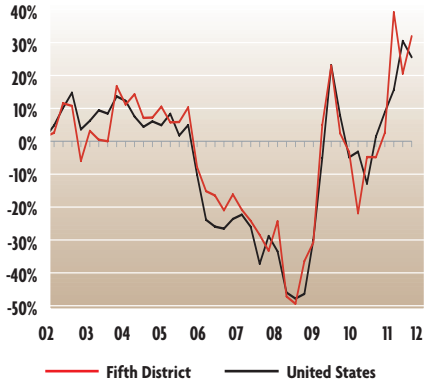
Nonfarm Employment Metropolitan Areas
Change From Prior Year
First Quarter 2002 - Second Quarter 2012



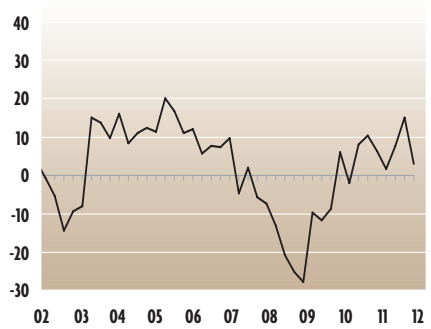
Unemployment Rate Metropolitan Areas
Change From Prior Year
First Quarter 2002 - Second Quarter 2012



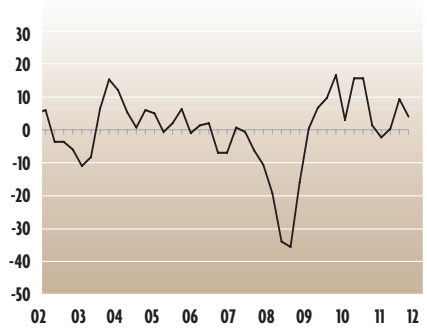
Building Permits
Change From Prior Year
First Quarter 2002 - Second Quarter 2012



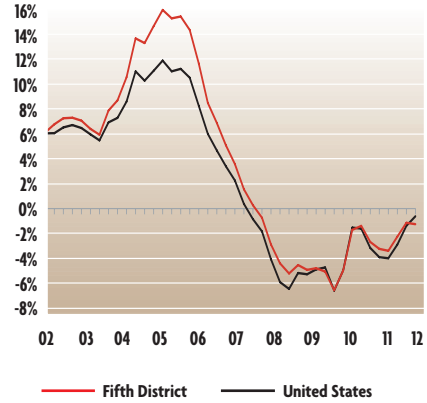
FRB—Richmond Services Revenues Index
First Quarter 2002 - Second Quarter 2012



FRB—Richmond Manufacturing Composite Index
First Quarter 2002 - Second Quarter 2012



House Prices
Change From Prior Year
First Quarter 2002 - Second Quarter 2012



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.

Metropolitan Area Data, Q2:12

	Washington, DC	Baltimore, MD	Hagerstown-Martinsburg, MD-WV
Nonfarm Employment (000s)	**2,468.0**	**1,306.8**	**100.2**
Q/Q Percent Change	1.4	1.6	2.6
Y/Y Percent Change	1.4	0.7	1.0
Unemployment Rate (%)	**5.5**	**7.3**	**8.0**
Q1:12	5.5	7.0	8.2
Q2:11	5.8	7.6	9.1
Building Permits	**5,790**	**1,562**	**153**
Q/Q Percent Change	46.7	18.1	22.4
Y/Y Percent Change	33.2	72.6	8.5

	Asheville, NC	Charlotte, NC	Durham, NC
Nonfarm Employment (000s)	**171.3**	**839.9**	**277.0**
Q/Q Percent Change	1.3	1.6	0.6
Y/Y Percent Change	0.8	1.1	1.1
Unemployment Rate (%)	**7.8**	**9.5**	**7.6**
Q1:12	8.0	10.0	7.9
Q2:11	8.5	11.0	8.1
Building Permits	**369**	**3,122**	**470**
Q/Q Percent Change	65.5	11.7	-54.7
Y/Y Percent Change	29.5	99.1	-13.9

	Greensboro-High Point, NC	Raleigh, NC	Wilmington, NC
Nonfarm Employment (000s)	**348.4**	**520.7**	**136.2**
Q/Q Percent Change	1.3	1.7	2.2
Y/Y Percent Change	1.5	2.3	-2.2
Unemployment Rate (%)	**9.8**	**7.8**	**9.8**
Q1:12	10.2	8.1	10.3
Q2:11	10.9	8.5	10.6
Building Permits	**477**	**3,029**	**671**
Q/Q Percent Change	-34.2	31.2	-10.7
Y/Y Percent Change	15.8	42.1	48.5

	Winston-Salem, NC	Charleston, SC	Columbia, SC
Nonfarm Employment (000s)	**206.0**	**301.2**	**353.5**
Q/Q Percent Change	0.7	1.8	1.4
Y/Y Percent Change	0.6	1.3	2.0
Unemployment Rate (%)	**9.0**	**7.7**	**8.1**
Q1:12	9.4	7.6	7.8
Q2:11	9.9	8.6	9.2
Building Permits	**505**	**1,888**	**1,159**
Q/Q Percent Change	48.1	82.9	38.6
Y/Y Percent Change	49.9	83.3	48.6

	Greenville, SC	Richmond, VA	Roanoke, VA
Nonfarm Employment (000s)	**304.0**	**618.6**	**156.2**
Q/Q Percent Change	0.3	1.2	1.4
Y/Y Percent Change	0.0	0.8	-0.4
Unemployment Rate (%)	**7.7**	**6.2**	**6.0**
Q1:12	7.4	6.4	6.1
Q2:11	8.7	6.9	6.6
Building Permits	**594**	**932**	**121**
Q/Q Percent Change	13.8	-8.7	47.6
Y/Y Percent Change	20.2	21.8	19.8

	Virginia Beach-Norfolk, VA	Charleston, WV	Huntington, WV
Nonfarm Employment (000s)	**747.3**	**148.5**	**116.1**
Q/Q Percent Change	2.9	1.3	2.1
Y/Y Percent Change	0.4	0.4	2.1
Unemployment Rate (%)	**6.4**	**6.5**	**7.2**
Q1:12	6.6	6.7	7.7
Q2:11	6.9	7.2	8.2
Building Permits	**1,248**	**48**	**9.0**
Q/Q Percent Change	-34.2	54.8	-71.0
Y/Y Percent Change	6.2	54.8	-69.0

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Opinion

The Risk of Short-Term Fiscal Fixes

BY JOHN A. WEINBERG

As I write this column in early January, Congress has just enacted legislation to head off a looming fiscal crisis known as the "fiscal cliff." Without an agreement by congressional leaders and the president, taxes would have increased markedly on January 1, with, among other things, the expiration of the 2001 and 2003 tax cuts, the end of the Social Security payroll tax reduction, and a sharp rise in the number of taxpayers subject to the Alternative Minimum Tax. At the same time, automatic spending cuts of more than $100 billion annually would have kicked in. The cumulative effect of these changes would likely have been damaging to the economy in the short run.

Many of the elements of the fiscal cliff were the result of earlier attempts by Congress to impose discipline on itself: The temporary nature of the Bush-era tax cuts and the Obama-era payroll tax cut ensured that Congress would have to consider explicitly whether to extend them in light of the country's fiscal situation. The automatic spending cuts were the result of a legislative fight in the summer of 2011 over the debt ceiling, a mechanism that effectively requires Congress to enact legislation before federal debt can grow beyond a preset point.

> The severity of the fiscal situation of an indebted government is a matter of expectations. Federal debt is sustainable only as long as investors believe it is.

Among its provisions, the fiscal-cliff legislation, titled the American Taxpayer Relief Act of 2012, increases some income tax and estate tax rates, limits tax exemptions and deductions for higher-income earners, and delays the automatic spending cuts for two months. Reasonable people can differ on the wisdom of these changes — but the Congressional Budget Office (CBO) has determined that the legislation will increase, rather than decrease, the federal deficit. What remains to be done is for policymakers to take meaningful steps to deal with the very real challenges created by the country's growing debt.

The larger picture of our fiscal situation is not an attractive one. The CBO, using realistic assumptions about the current path of fiscal policy, estimated in August that federal debt held by the public will reach $22 trillion in a decade, amounting to 90 percent of GDP, and will continue escalating from there. Already, federal debt exceeds 70 percent of GDP — the highest level since 1950, when the federal government was still paying down its borrowing for World War II, and a share about twice the level of just five years ago.

There is a broad consensus that the deficit must be addressed eventually. The controversial question is how long the difficult choices can be postponed. At stake is a possible loss of confidence in U.S. government debt; we can keep borrowing at reasonable rates only as long as financial markets believe that the debt will be repaid from future surpluses and future borrowing capacity. If investors lose that belief — if they conclude that the government's only realistic options are to default or to have the central bank inflate away the debt under political pressure — the game is over; their willingness to hold federal debt would decline, increasing the cost of debt service, and making fiscal reforms all the more difficult.

How many years do U.S. policymakers have before such a day of fiscal reckoning? We are in largely uncharted territory. History provides little guidance on the conditions under which investors would begin to view federal debt as unsound. In 1946, federal debt held by the public reached 109 percent of GDP — but the wartime needs that had brought about the debt were known to be temporary, so the federal government was able to maintain the confidence of bond buyers. Overseas, Japan's gross debt has recently been more than 200 percent of GDP without panicking investors, yet Greece is dealing with crisis conditions on account of a gross debt around 170 percent of GDP.

Some take comfort in the fact that interest rates on Treasury securities remain low. They believe rising interest rates will give us a flashing yellow light in sufficient time for us to take action. That assumption could be correct. It is certainly an attractive and comforting one, particularly at a time when spending cuts or tax increases would hurt an already tepid recovery.

The severity of the fiscal situation of an indebted government is a matter of expectations, however, and expectations can shift suddenly. Because the federal debt is sustainable only as long as investors believe it is, a sudden loss of confidence would have dire consequences.

Consequently, the responsible assumption for policymakers is that low interest rates do not necessarily foretell a prolonged period in which standstill agreements between branches of government and short-term fixes will continue to be enough. Indeed, continued delay of a more lasting resolution may itself be harmful to confidence. Making adjustments after expectations have already turned would almost certainly be costlier and far more painful. **RF**

John A. Weinberg is senior vice president and director of research at the Federal Reserve Bank of Richmond.

Next Issue

Below the Poverty Line

The official U.S. poverty rate determines billions of dollars in federal and state aid. But the number doesn't tell us much about what life is like for the 15 percent of Americans who live below the poverty line. Economists are working on new measures to better describe the poor's quality of life and help gauge the effectiveness of government programs.

Why Are Banks Holding So Many Reserves — And Is That a Problem?

Depository institutions are holding a little more than $1.4 trillion in excess reserves at Federal Reserve banks — up 700-fold from around $2 billion in mid-2008. Why are banks holding such a high level of reserves beyond what the Fed requires? Could those reserves lead to higher inflation? Many economists are optimistic that the Fed can avoid such an outcome with its power to pay interest on reserves. Are they right?

Online Education

A new breed of online education programs has drawn attention throughout the world of higher education by offering free courses taught by industry experts and college professors. These websites, which have attracted hundreds of thousands of students from across the globe, promise a world-class education for the Internet age. Will they revolutionize the university model?

Economic History

In 1993, a proposed theme park called Disney's America seemed like the perfect catalyst to bolster the fortunes of Prince William County, Va. But the proposal generated a national outcry against suburban sprawl and the "Disneyfication" of American history. Disney walked away, and Prince William County still struggles with the fiscal challenges of a burgeoning bedroom community.

Federal Reserve

Can the Fed move the economy just by talking? Economists have long argued that the answer is "yes," making the Fed's communications about future policy a potentially useful tool, especially when interest rates can't be pushed lower to combat economic sluggishness. But a look at the risks reveals that central bank talk may not always be cheap.

Jargon Alert

In a weak labor market, wages generally should fall in real terms to make hiring more affordable and close the employment gap. When they don't, economists say there are sticky wages — and in some recessions, they may be one reason why unemployment remains stubbornly elevated.

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