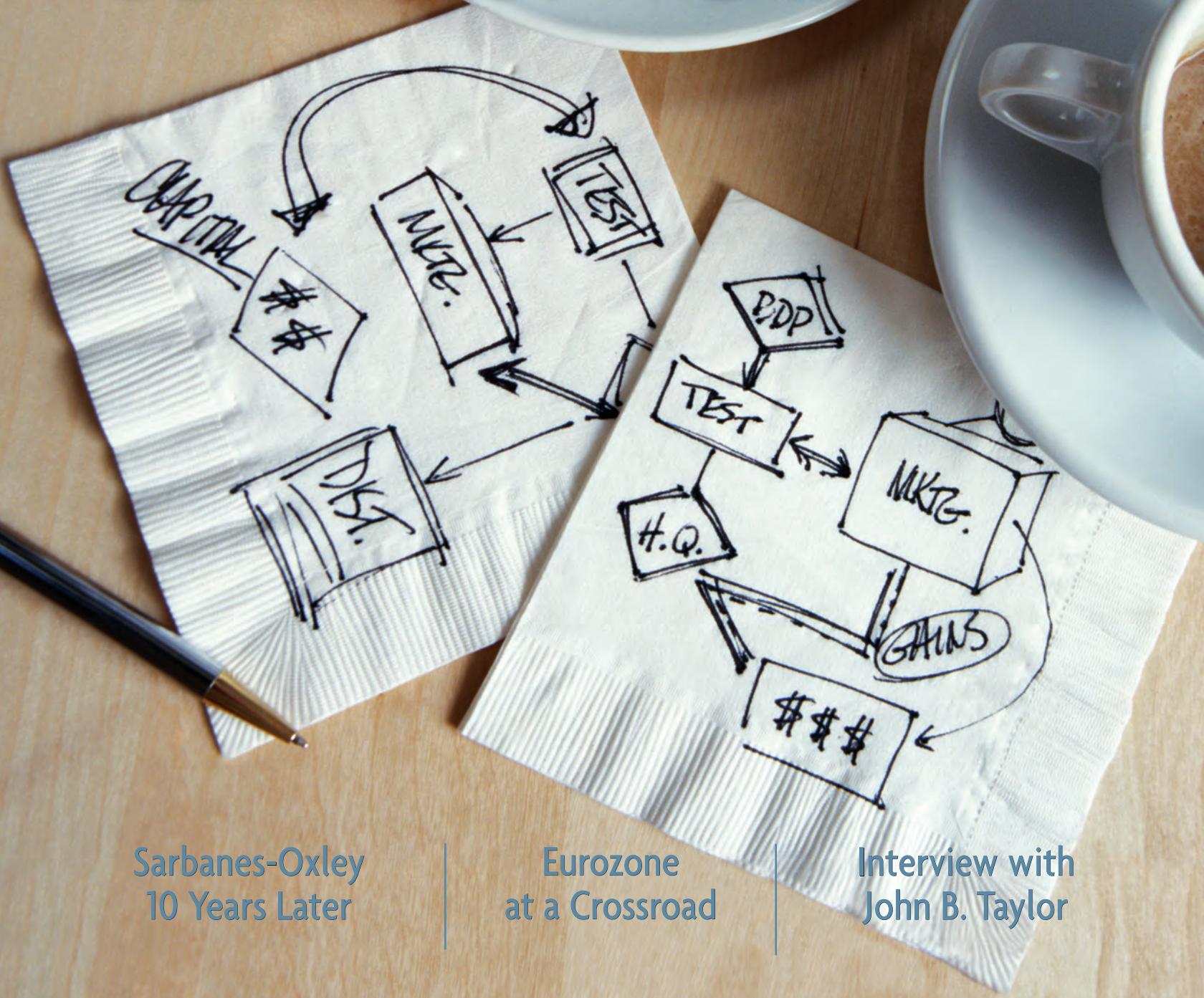


FIRST QUARTER 2012

# REGION FOCUS

THE FEDERAL RESERVE BANK OF RICHMOND

## WHAT WE DON'T KNOW ABOUT INNOVATION...



Sarbanes-Oxley  
10 Years Later

Eurozone  
at a Crossroad

Interview with  
John B. Taylor

# REGION FOCUS

VOLUME 16  
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# The Limits of Limiting Financial Innovation

Innovation typically brings to mind advances in technology and medicine, such as the personal computer or the development of vaccines. Such innovations are a key driver of economic growth, as discussed in the cover story of this issue of *Region Focus*. But there is another kind of innovation that plays a crucial role in our economy, one that has received a great deal of attention in recent years: financial innovation.

Modern financial innovations range from ATMs and online banking to complex derivatives and currency swaps. Many have had a positive effect on economic growth and macroeconomic performance. Beginning in the 1980s, for example, new credit products reduced borrowing costs for both consumers and businesses, enabling them to better smooth their consumption and investment in the face of shocks, and potentially moderating the negative effects of reduced spending and lending on the economy as a whole. Other innovations, such as asset-backed securities or credit default swaps, help to allocate capital and allow companies and investors to protect themselves against risk.

Of course, many of these same products were at the heart of the financial crisis of 2007-2008. Should that change the way we think about the benefits of financial innovation?

I believe that it should not. At issue is not whether financial innovation is inherently good or bad, but rather the incentives market participants have to innovate, and the regulatory environment in which they do so. In particular, the size and ambiguity of the government financial safety net gives institutions an incentive to use financial innovations to take on excessive risk, believing they are insulated from losses by an implicit government guarantee. According to estimates by Richmond Fed researchers Nadezhda Malysheva and John Walter, the safety net covered \$25 trillion in liabilities at the end of 2009, or 59 percent of the entire financial sector. Nearly two-thirds of that support is implicit and ambiguous.

Outside the financial sector, the interests of innovators tend to be aligned with the interests of society as a whole; a new product or service generally will only be profitable if it improves the well-being of households or businesses. Within the financial sector, however, innovations often are a means of “regulatory bypass,” an attempt to work around the constraints imposed by regulators. For example, money market mutual funds arose as a means of circumventing regulatory constraints on deposit interest rates. Such innovations may offer legitimate benefits to end users, but problems can arise when there is a mismatch between the scope of prudential regulation and the size of the government safety net: Institutions that are not subject to prudential regulation, but believe that they are part of the safety net, often engage in increasingly risky behavior.

Prior to the financial crisis, officials often followed a policy of “constructive ambiguity” about the likelihood of intervening. Policymakers downplayed their willingness to provide support, hoping firms would limit their risk, but still left room for intervention when necessary. In practice, however, policymakers tended to intervene more frequently, increasing the market’s expectations about the likelihood of rescues.



The repurchase, or “repo,” market is an illustrative example. A repo is a short-term collateralized loan that provides borrowers with a low-cost way to finance a broad range of assets and offers lenders an attractive rate of return on a highly liquid investment. Repo financing becomes risky, however, when lenders refuse to roll over their positions and the borrower has trouble finding other ways of financing its assets, as happened to Bear Stearns in March 2008. Bear Stearns’ sale to JPMorgan Chase did benefit from government support — and the expectation of that support may have led to a reliance on such fragile financial arrangements in the first place.

Policymakers can reduce this tension by clarifying the boundaries of the financial safety net and making sure that those within the safety net are subject to rigorous prudential regulation. The response to the financial crisis has largely focused on the latter. New regulations may succeed in limiting risk insofar as they apply, but I believe the greater concern is that we have not taken adequate steps to reduce and clearly define the size of the safety net. Designing a regulatory regime before we have determined the extent of the safety net is “putting the cart before the horse.” Financial firms and market participants will continue to have an incentive to find innovations that benefit from the safety net but bypass prudential regulation.

Enhancing prudential regulation is a valuable step forward. But to start with, we must address the incentives that lead to potentially harmful innovations in the first place — and be careful not to limit those innovations that do contribute to economic growth and well-being. **RF**

JEFFREY M. LACKER  
PRESIDENT  
FEDERAL RESERVE BANK OF RICHMOND

## Post-Panamax

## East Coast Ports Prepare for Bigger Ships from the Panama Canal

The Panama Canal is getting wider and deeper to accommodate the increasing size of container ships in the world's fleet. Likewise, the ports need to add depth and breadth.

And all eyes are on the Southeast, which has the nation's fastest-growing population, "but has the least capability in terms of channel depth," according to economist Keith Hofseth of the U.S. Army Corps of Engineers, the agency charged by Congress with deciding which port expansions are a good taxpayer investment.

Of the major container cargo ports in the Southeast, currently only Virginia's Norfolk International Terminals can accommodate "post-Panamax" vessels — which carry more than twice the container volume as those that can currently squeeze through the Panama Canal — in all tidal conditions. The majority of goods that come through Norfolk's port, however, are shipped to the Midwest and Upper Midwest, leaving no

port primarily serving Southern markets that can receive the larger ships 24 hours a day. A feasibility study for the Port of Charleston, which today can receive fully loaded post-Panamax ships only at high tide, is currently under way. The study alone will cost about \$20 million, and the deepening has an estimated price tag of \$300 million, according to spokeswoman Allison Skipper. In July 2010, the Port of Savannah — second on the East Coast in container volume — received word that the Corps of Engineers approved its deepening project based on engineering feasibility, economic viability, and environmental acceptability. Other possible recipients of federal dollars include ports in Miami, Tampa, Mobile, and Houston.

Though port projects may be justified, "now the scramble will be to find the money to fund these investments," says Hofseth. The Corps, a federal agency, shares the cost of dredging projects with the ports, which can raise money through bond issues, and local governments. But the Corps' historical budget implies that it is unlikely that all ports will get money to expand, he says. Expansion entails studies such as those conducted in Savannah, which take years — ports not already deep enough won't be by the time the expanded Canal is open in 2014 — and then ports that win approval from required federal agencies will be in competition for an undetermined pool of federal dredge money. In preparation for this battle, ports have been touting the regional economic benefits of greater port traffic, as well as their respective port infrastructures and proximities to regional rail lines.

For them, the stakes are potentially high. More than 95 percent of cargo imports to the United States arrive by ship, much from China and other Asian countries. Most imports from Asia that end up on the East Coast initially arrive on the West Coast and travel east by rail, highway, and waterway. Only a fifth arrive in East Coast ports via the Panama Canal. A small fraction of imports travel the globe in the opposite direction through Egypt's Suez Canal.

East Coast ports plan for their arrivals to grow. But others in the shipping business say the Canal's expansion won't bring a sudden flood of new traffic. Not every

PHOTOGRAPHY: VIRGINIA PORT AUTHORITY



*A vessel loaded with containers arrives at Norfolk's port.*

port can win, says Theodore Prince, a former rail and ocean carrier executive. He heads a shipping consulting firm based in Richmond. As ship sizes grow, they call on fewer ports per trip. “The big ships only make money when they’re moving.” Also, ground and waterway transport from the West — train, truck, and barge — is faster, he says. A slight cost savings from a new shipping route often is not worth adding several days to transit since that increases the time between production and delivery. Some shippers are

so anxious to minimize this window that final destinations are determined once the cargo has arrived in the United States, based on to-the-minute forecasts of local demand.

The Corps of Engineers will wrap up a report in June 2012 on the options for port and waterway expansions to accommodate post-Panamax vessels, but it will not recommend ports that should receive priority. The decision of where to direct limited funds will be Congress’ to make.

— RENEE HALTOM

## District Disparity Income Gap Grows in Nation’s Capital, Narrows in Suburbs

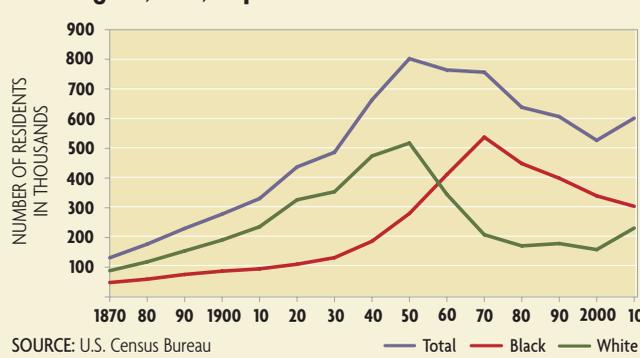
The income gap between whites and blacks living in Washington, D.C., is among the highest in the nation, according to U.S. Census Bureau figures released in December. On average, white residents earn \$3.04 for every \$1 earned by black residents. That’s the fourth-highest earnings difference in the nation when compared to the 700 U.S. counties with the largest black populations, according to William Frey, a demographer and senior fellow at the Brookings Institution, who has analyzed the data. The greatest white-black disparity was \$4.15 to \$1 in New York County (Manhattan). D.C.’s gap has increased modestly during the past two decades; in the 1990 census, the ratio was \$2.95 for every \$1.

Washington, D.C., scores high on other measures of income inequality as well. Residents in the 90th income percentile earn nearly 22 times as much as those in the 10th percentile, compared to the national average of 11 times. Among cities of more than 100,000 people, only Atlanta and New Orleans showed greater overall income disparities.

The black-white gap has narrowed in the Maryland and Virginia suburbs of D.C., however. In many of the counties in the metro area, the gaps are among the lowest in the nation. In Stafford County, Va., whites earn \$1.17 per \$1 earned by blacks, compared to \$1.40 per \$1 in 1990. In Prince George’s County, Md., the nation’s wealthiest majority-black county, the ratio has declined from \$1.33 per \$1 to \$1.22 per \$1 over that same period. Of the 21 U.S. counties with the highest per capita incomes for blacks, 10 are in the D.C. metro area, including No. 1, Loudoun County, Va.

The growing income gap in the city reflects a reverse of migration patterns that date back to the Civil War. Washington, D.C., became the first majority-black city in the United States in 1957 as blacks were drawn by federal

Washington, D.C., Population



jobs which provided a path to upward mobility.

“D.C. was one of the first cities where blacks were able to develop institutions and neighborhoods,” says Roderick Harrison, a sociologist at Howard University and the former chief of racial statistics at the Census Bureau. “It is the earliest black middle class that one sees emerge.”

After World War II, white residents began moving to the suburbs, while the city’s black population continued to grow. By 1970, 70 percent of D.C. residents were black.

More recently, the trend has reversed as black residents have moved to the suburbs. Nationwide, the share of blacks in large metro areas who live in the suburbs increased from 37 percent in 1990 to 51 percent in 2010; the D.C. metro area had the third-highest increase. Within the city, the black population fell more than 11 percent between 2000 and 2010, according to 2010 census data, and in 2011, it fell below 50 percent for the first time since 1957. “D.C. was really at the forefront of suburbanization,” says Frey. “The government jobs that were available provided a good opportunity for socioeconomic mobility for African-Americans for many decades

before affirmative action and the real impact of the civil rights movement,” which enabled many black residents to follow whites out to the suburbs.

Not everyone who leaves the city is upper or middle class; many of the suburbs’ new residents are from Wards 7 and 8, where poverty rates are as high as 40 percent. Still, some residents have the means to cross the line into neighboring Maryland, which increases the poverty concentrations in the neighborhoods they left behind, Harrison says.

At the same time, gentrification and a reversal of the previous decades’ white flight has brought new people and businesses to the city. Median income growth was the third highest in the nation during the 2000s. D.C.’s white population increased 31 percent between 2000 and 2010, and most are college educated. Nine in 10 whites in the city have a college degree; two in 10 blacks do. New government and high-tech jobs often require a college degree, which bodes ill for D.C.’s income gap.

— JESSIE ROMERO

## Copper Robbers Rising Prices Fuel Thefts

Thieves in Charles Town, W.Va., recently struck an elementary school, but their target wasn’t computers or craft supplies — it was copper coils housed within heating and air-conditioning units. Across the country, homes, businesses, and churches have reported stolen copper gutters or plumbing. Phone and power service has been disrupted as telecom and power companies struggle to replace copper wiring faster than it goes missing.

“It’s almost a weekly occurrence,” says Dan Page, communications manager for Frontier Communications, which provides landline phone and broadband Internet services to roughly 95 percent of West Virginia. “Since August 2011, we’ve had more than 120 aerial cable thefts.”

Like gold and silver, copper is an excellent conductor of electricity. But unlike its more precious relatives, copper has historically been much cheaper and more readily available, leading to its ubiquitous use in infrastructure. Since 2003, demand from industrializing countries like China has outpaced supply, as low prices in the previous decade had led copper miners to scale back production. As a result, the price of copper has climbed to record highs — from less than a dollar per pound in 2002 to roughly \$3 per pound today in 2002 dollars.

Michael Baylous, public information officer for the West Virginia State Police, says the sour economy makes copper theft more attractive. The payoff for stolen copper is often dwarfed by the damage thieves leave behind, however. At the Charles Town school, the stolen copper coils would fetch about \$800 from scrap dealers, but repairs will cost more than \$300,000. Likewise, Page reports that Frontier has spent \$680,000 to replace stolen cable in its coverage area.

Copper theft is also a problem elsewhere in the District. Verizon employees reported missing copper wire in Maryland, leading to the arrest of thieves who were using a bucket truck to remove wires from telephone poles. Dominion Virginia Power, which serves customers in Virginia and North Carolina, says that copper theft has



*A Frontier Communications’ employee surveys the damage left behind by copper thieves in West Virginia. The company has replaced 38,000 feet of stolen cable since August 2011.*

resulted in power outages along highways, airports, and even military bases. The Federal Bureau of Investigation issued a report in 2008 warning that copper theft posed a growing threat to infrastructure across the country.

“We are very concerned about the public safety risks that are associated with cable theft,” says Page. “People who live in areas with no other means of communication are losing their link to friends, family, and emergency care.”

States in the Fifth District and elsewhere have been exploring methods to deter copper thieves. Virginia and South Carolina require scrap metal sellers to obtain permits; scrap yard employees are also required to record identification information about each seller. Both states also require some scrap copper sales to be paid by check, which has helped to reduce theft. North Carolina is modeling its new laws on South Carolina’s.

West Virginia has increased the fines for metal theft. Police are now authorized to stop vehicles suspected of carrying stolen metal. Telecommunication companies, utilities, and recyclers support the law.

Those deterrents may not be enough, however, given the risks some thieves take to obtain copper. In February, police in Princess Anne, Md., found the remains of a man who was electrocuted to death after trying to steal copper from an electrical transformer. He was not the first would-be thief to suffer that fate.

“I don’t know that you can fully deter this behavior,” says Baylous.

— TIM SABLİK

## BYOB: Bring Your Own Bag Montgomery County, Md., Taxes Shopping Bags

**P**aper or plastic?" is a question most grocery shoppers expect at the checkout counter. But in Montgomery County, Md., that question has changed. Now it's, "Did you bring a bag?" Since the start of the year, shoppers have paid an extra nickel for any bags that retail stores provide.

The new tax is intended to reduce litter in the county's waterways. A 2008-09 study prepared by the Anacostia Watershed Society found 121 tons of litter in county streams and rivers, and shopping bags were a major component. In 2009, Montgomery County spent \$3 million on litter cleanup. The county plans to use revenue from the new tax to pay for future cleanup efforts. Although retailers previously did not charge extra for the bags, the legislators argued that the bags' true costs included the litter they generated.

Economists refer to such costs borne by third parties as "negative externalities." In this case, the public must pay for litter cleanup. The new tax ensures that at least some of the externality is priced into the bags customers use.

But covering cleanup costs isn't the only reason legislators passed the law. By creating a cost for using disposable bags, they hope the law will induce shoppers to bring their own reusable bags instead.

Montgomery County based its law on one enacted two years earlier in neighboring Washington, D.C. Evidence

shows that D.C.'s tax is having an impact on disposable bag use. Although the D.C. tax only applies to stores that sell food or alcohol, the District Department of the Environment reports that 75 percent of surveyed shoppers reduced their disposable bag use after the fee became effective. Surveyed businesses reported bag consumption dropped by half.

To date, the District tax has generated \$3.9 million since January 2010, less than forecast. For the measure's supporters, the lower revenue is a sign of the tax's success, not its failure; it means that more shoppers are changing their behavior to avoid it. Initial reports show the Montgomery County tax raised \$154,000 in January 2012, roughly the amount raised by the District's bag tax in its first month.

Of course, disincentives are not the only way to change behavior. Some supermarket chains, including Kroger and Safeway, have experimented with offering 5-cent rebates to customers who bring reusable bags. But Kroger reported no difference in reusable bag usage at its stores that offered a rebate. Early evidence from Montgomery County and the District suggests that the stick has been more effective in changing shopper behavior than the carrot. Officials in other Maryland counties will be observing the tax's impact, as some consider similar laws.

—TIM SABLİK

## \$19.20 to Cross NC in 2019? More Fifth District States Propose Tolls on I-95

**N**orth Carolina and Virginia are pursuing plans to place tolls on Interstate 95 to fund major improvements to the Fifth District's most traveled highway. Currently there are no tolls on I-95 south of Maryland.

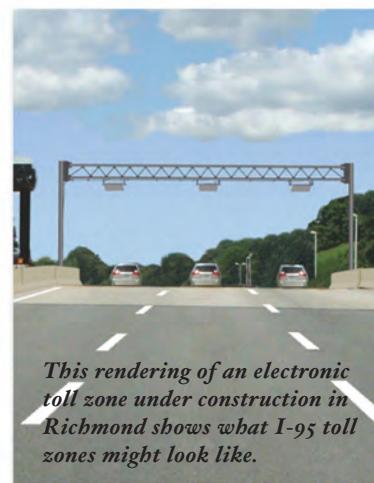
In February, the Federal Highway Administration granted conditional approval for tolls on I-95 in North Carolina as part of the agency's Interstate System Reconstruction and Rehabilitation Pilot Program. Virginia received conditional approval in September 2011 to switch a pending toll proposal from Interstate 81 to I-95. The federal initiative allows up to three states to place new tolls on existing interstates that cannot be adequately maintained and improved with other sources of funding. (Missouri is the third state in the program.)

North Carolina's ambitious proposal would expand and improve I-95 throughout the state. The N.C. Department of Transportation estimates the cost at

between \$10.3 billion and \$12 billion to reconstruct, expand, maintain, and operate the 181-mile stretch over 40 years. The first phase would widen and improve I-95 from its junction with Interstate 40 near Benson to its interchange with state Route 211 at Lumberton. This 61-mile segment has the highest levels of existing and projected traffic on I-95 within the state, according to North Carolina's January 2012 "I-95 Planning and Finance Study."

The study recommends nine toll zones at approximately 20-mile intervals plus ramp toll zones at adjacent interchanges. This would discourage out-of-state

*continued on page 41*



*This rendering of an electronic toll zone under construction in Richmond shows what I-95 toll zones might look like.*

# When the Fed Conducts Credit Policy

BY DAVID A. PRICE

**As the Fed targets lending to help specific sectors or institutions, does it jeopardize its independence?**

The U.S. Constitution states, “No Money shall be drawn from the Treasury, but in Consequence of Appropriations made by Law; and a regular Statement and Account of the Receipts and Expenditures of all public Money shall be published from time to time.” The power to appropriate money, which James Madison called “the power over the purse,” seemingly gives Congress the sole control of fiscal policy.

But just what is fiscal policy? In the view of some, the Fed has made and carried out what amounts to fiscal policy on a significant scale at various times in the past half-century, most recently in response to the 2008 financial crisis. In particular, the Fed has engaged in fiscal policy in credit markets, also known as “credit policy,” in which it directly or indirectly channels credit to private entities and foreign central banks — in contrast with monetary policy, in which the Fed creates bank reserves by purchasing only Treasury securities from the public and holding them while turning the interest over to the Treasury.

To be sure, the Fed has long extended credit to private banks through its discount window. The scale of that lending has been quite limited, however, in comparison to the Fed’s actions following the financial crisis. Fed lending to private entities and other central banks reached \$1.5 trillion by the end of 2008. Lending to foreign central banks had a modest resurgence earlier this year, peaking at \$109 billion in mid-February.

The Fed has legal authority to carry out such activities thanks to emergency powers that Congress granted it in 1932 and expanded in 1991. In the eyes of some critics, however, that authority is problematic because it more appropriately belongs to the Treasury than the Fed.

“In fall 2008, the Treasury could have issued debt to fund emergency actions, but that would have been politically difficult,” says Richmond Fed economist Robert Hetzel. “If you think that fiscal policy should be subject to democratic monitoring because it’s in the spirit of the Constitution, that’s exactly the sort of political debate you want to have. But it’s painful.”

Moreover, there is concern that such activities could make it more difficult for the Fed to maintain its independence when conducting its core functions, especially the setting of monetary policy. “The Fed basically made itself an active player in fiscal policy,” says Charles Calomiris

of the Columbia University Graduate School of Business. “The consequence is that the Fed loses its ability to have itself viewed as outside the political process of spending and taxing.”

## Discount-Window Lending to Troubled Institutions

Discount-window lending by Federal Reserve district banks provides liquidity on a short-term basis, usually overnight, to depository institutions. The longtime dictum of central banking has been that the discount window should be open only to illiquid banks, not insolvent ones — that is, only to banks that are sound, but which are facing a temporary liquidity crunch. The extent to which the Fed carries out lending through the discount window has been limited by its short-term nature, by the constraint on the types of institutions with access to the window (supervised depository institutions), and, in theory, by the requirement that the institution not be in distress.

A rationale for closing the discount window to distressed institutions is to avoid putting taxpayer funds at risk. Institutions that borrow at the discount window must pledge collateral, but such lending still creates risk indirectly: By enabling a distressed bank to make payments to uninsured depositors and unsecured creditors, loans to a distressed bank effectively move the deposit insurer — the Federal Deposit Insurance Corporation — to the back of the line if the bank’s distress reaches a point when the FDIC must intervene.

The Fed’s district banks have not always heeded the dictum to lend only to illiquid institutions, however. A 1992 paper by Anna J. Schwartz of the National Bureau of Economic Research looked at discount-window lending from January 1, 1985, to May 10, 1991, including the financial-strength scores that regulators had assigned to the institutions. The scores were so-called CAMEL ratings (for Capital adequacy, Asset quality, Management, Earnings, Liquidity). Of the 530 borrowers that failed within three years of the start of their discount-window borrowing, more than 82 percent had a CAMEL rating of 5 at the time of their borrowing, the rating reserved for “institutions with an extremely high immediate or near-term probability of failure.” More than 90 percent had a rating of 4 or 5.

“These loans were granted almost daily to institutions with a high probability of insolvency in the near term, new borrowings rolling over balances due,” Schwartz observed. “In aggregate, the loans of this group at the time of failure amounted to \$8.3 billion, of which \$7.9 billion was extended when the institutions were operating with a CAMEL 5 rating.”

Earlier in the Fed’s history, two of the most famous

instances of Fed credit policymaking took place through the discount window. The distress of Continental Illinois National Bank and Trust Company in 1984, then the seventh-largest bank in the country, worried policymakers who perceived the bank as too big to fail. Despite the bank's effective insolvency, the Fed granted the bank and its holding company access to the discount window from May 1984 through February 1985 to keep its doors open, with the total loan balances reaching as high as \$8 billion (\$17 billion in present-day dollars).

Another episode grew out of the bankruptcy of the Penn Central Transportation Co. in 1970. The Fed believed that a financial crisis might result if the company defaulted on its \$82 million in outstanding commercial paper because that might cause lenders to shy away from commercial paper in general. After Congress declined to authorize fiscal action to bail out the company, the Fed channeled credit to commercial paper markets indirectly by, in the words of its 1970 annual report, making clear that "the Federal Reserve discount window would be available to assist banks in meeting the needs of businesses unable to roll over maturing commercial paper."

The Continental Illinois and Penn Central cases remained the high-water marks of Fed credit policy for nearly a quarter-century — until the summer of 2007.

### **Emergency Lending After the Financial Crisis**

On the eve of the 2007 havoc in mortgage-backed securities markets, the Fed had long followed a policy known as "Treasury only": It held mainly Treasury securities and discount-window collateral. This policy both avoided the exercise of fiscal power and kept risky assets off the Fed's balance sheet.

In response to the emerging financial crisis, the Fed instituted a series of major actions, the first of which was the Term Auction Facility, or TAF. Open only to depository institutions, the TAF was similar in concept to the discount window, except that it relied on an auction mechanism to control the volume of lending and to increase the anonymity of the borrowing banks. (Because the Fed publishes the total weekly lending of each of the district banks, it is possible under some circumstances for banks to surmise which other banks have borrowed from the discount window; some observers believe this may inhibit discount-window borrowing.) TAF loans, which had terms of 28 days or 84 days, were also longer-term than discount-window loans. The total of TAF loans outstanding reached a peak of \$493 billion in March 2009.

The Fed used its emergency powers to create a wide-ranging array of additional programs. Some of these programs were based on a belief that certain financial markets were not functioning adequately. From January 2009 to March 2010, to support housing and mortgage markets, the Fed purchased \$1.25 trillion of mortgage-backed securities guaranteed by Fannie Mae, Freddie Mac, and Ginnie Mae. To improve the market for asset-backed securities, such as

securitized auto loans and credit-card loans, the Fed created the Term Asset-Backed Securities Loan Facility (TALF) in November 2008 to make loans to owners of those securities. The program peaked in March 2010 with assets of \$48.2 billion. The Fed also created lending facilities to provide support to commercial paper, money-market funds, and securities broker-dealers.

Most controversially, the Fed extended credit to rescue the investment bank and securities firm Bear Stearns Companies and the insurance company American International Group (AIG). When Bear Stearns was poised to collapse in March 2008, the Fed concluded that its failure would destabilize the financial system. The Fed, acting through the New York Fed, therefore used its emergency powers to clean up the company's balance sheet and facilitate its acquisition by JPMorgan Chase. The New York Fed created a company called Maiden Lane for the purpose of buying various risky assets from Bear Stearns and loaned Maiden Lane \$29 billion with which to do so.

In the case of AIG, the Fed believed that the global financial system would be at risk if the company failed and were unable to make good on its credit-default swap (CDS) agreements. (Roughly speaking, CDS agreements are similar to insurance against a borrower's default.) The Fed announced in September 2008 that it would provide the company an \$85 billion line of credit; later that year, it also formed two companies, Maiden Lane II and Maiden Lane III, and extended credit to them so that the former could purchase mortgage-backed securities from AIG and the latter could purchase collateralized debt obligations that AIG had insured with its CDS agreements. Maiden Lane II borrowed \$19.5 billion from the Fed and Maiden Lane III borrowed \$24.3 billion.

The Fed has since arranged for Maiden Lane II to sell its holdings and repay all of its loans. Although Maiden Lane and Maiden Lane III have repaid most of their loan balances, the Fed still has some loans to those entities on its balance sheet.

The Fed's rescue operations for nonbanks were based on an expansion of its emergency powers by the Federal Deposit Insurance Corporation Improvement Act of 1991, which freed the Fed from longstanding requirements concerning the quality of collateral from nonbanks. Federal law in the past had generally allowed the Fed to provide emergency assistance to nonbanks only if the institutions' intended use of the borrowings fell within a narrow set of eligible purposes or if those institutions pledged collateral of the same type required from member banks at the discount window. The Fed had not used its emergency power to lend to nonbanks since the 1930s. (Shortly after passage of the 1991 law, Walker Todd, then of the Cleveland Fed, expressed concern in an article that "greater potential access to the federal financial safety net could boost the risk-taking incentives for nonbanks.")

The rescue programs created in response to the financial crisis were criticized from across the political spectrum

within Congress and elsewhere. In the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, Congress responded in part by narrowing the Fed's emergency lending powers. Among other restrictions, the Act requires that any Fed lending programs must have "broad-based eligibility," that they must be for the purpose of providing liquidity to the financial system rather than to aid a failing financial company, and that they must be approved by the Secretary of the Treasury.

Columbia's Calomiris argues that it was proper for the Fed to use its emergency powers in situations where it was not feasible to go to the Treasury or Congress because time was of the essence — but, he says, that this was not the case for most of the emergency programs. "No one can argue that there wasn't enough time for Congress and the Treasury to act on the mortgage-backed securities markets," he says. "That was not a policy that was done over a weekend."

Although such rescue operations could have been carried out by the Treasury, relying on the Fed's emergency powers is attractive from the perspective of policymakers, says Marvin Goodfriend, an economist at Carnegie Mellon University's Tepper School of Business and formerly senior vice president and policy advisor at the Richmond Fed. It avoids the delays and uncertainties of the political process, and it avoids an increase in the federal deficit (since Fed lending does not count in the deficit as it is officially measured). But the very existence of those powers may have fueled the perception that large failing institutions would be rescued. "It was the expansive credit powers granted by Congress that made it virtually inevitable that those powers would be exercised in a crisis in the future," Goodfriend says.

### Currency Swaps

To help foreign economies deal with the aftermath of the financial crisis, the Fed established currency swap lines (also known as liquidity swap lines) with numerous other central banks, starting with the European Central Bank in December 2007. The programs enable the foreign central banks to offer short-term dollar loans to banks within their jurisdiction using funds that the Fed has loaned to the central banks. The initial wave of swap programs continued until February 2010. Swap programs with five central banks were relaunched in May of that year and remain in operation. The Federal Open Market Committee (FOMC) voted on November 28, 2011, to authorize the programs through February 1, 2013 and to establish swap arrangements in the currencies of the foreign central banks.

The programs are generally not regarded as a subsidy to the foreign central banks or as a financial risk to the Fed. The Fed charges the central banks a market-based interest rate. The Fed suffers no exchange-rate risk since the exchange rate

is the same in both directions of the transaction. The foreign central bank is responsible for covering any defaults.

The programs pose the institutional risk of increased pressure on the Fed's political independence. Some wonder whether the Treasury, rather than the Fed, should fund any such programs.

"There's no reason in theory why it couldn't be done through the Treasury through the Exchange Stabilization Fund, but there are always issues in lending to a foreign country," says Hetzel of the Richmond Fed. "Foreign aid is subject to a lot of debate."

Richmond Fed president Jeffrey Lacker dissented from the November 28 vote by the FOMC to extend the programs. (Lacker voted as an alternate to then-voting member Charles Plosser, president of the Philadelphia Fed.) Lacker explained in a statement that he opposed the currency swap programs because such lending "amounts to fiscal policy, which I believe is the responsibility of the U.S. Treasury."

### Maintaining a Boundary

The Fed and the Treasury Department entered into a formal accord in 1951 establishing that the Fed would carry out monetary policy only to stabilize the economy, not to serve the Treasury's borrowing needs. The historic agreement was a reversal of a practice in place since World War II, in which the Fed used monetary policy to reduce the cost of Treasury borrowing. Goodfriend and others have argued that the temptation for policymakers to rely on the Fed to engage in fiscal policy warrants a new Fed-Treasury accord to maintain a boundary between their functions. Goodfriend argued in a 1994 article that among the principles of such an accord should be that liquidity assistance, such as discount-window lending, must not assist insolvent institutions (a principle since incorporated into the Dodd-Frank Act) and that the Fed should not use its balance sheet to "fund expenditures that ought to get explicit Congressional authorization."

The Fed and the Treasury Department did issue a statement in March of 2009 on the delineation of responsibilities of the two institutions. While the statement indicated that "decisions to influence the allocation of credit are the province of the fiscal authorities," and pledged Treasury's help in removing the Maiden Lane assets from the Fed's balance sheet, it largely reaffirmed the Fed's continued long-term use of its emergency lending powers.

What extraordinary steps should the Fed be able to take on its own in the midst of a potential financial catastrophe, and when should policymakers be obliged to trudge, hat in hand, to Capitol Hill to ask elected representatives for approval? In the wake of the worst financial crisis since the Great Depression, these questions remain only partially answered.

**RF**

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# Money for Marrow?

BY TIM SABLİK

Roughly 5,000 people in the United States receive blood stem cells from a bone marrow transplant each year, but twice as many patients each year are diagnosed with blood diseases, such as leukemia, for which blood stem cells may be the best or only treatment. One California nonprofit hopes to close that supply gap by offering incentives in the form of scholarships or housing subsidies to donors with rare bone marrow types. But until a recent court decision, such a plan would have been illegal.

The 1984 National Organ Transplant Act (NOTA) bans compensation for organs, including bone marrow. MoreMarrowDonors.org, which plans to offer incentives to donors, was part of a group that filed suit in federal district court in California arguing that certain donations are outside the scope of NOTA. They conceded that the law may have originally included bone marrow to protect donors from a painful and potentially risky process. When NOTA was written, bone marrow was extracted directly from the hip bone via a large needle. The majority of marrow donations today, however, are collected using a less invasive process called apheresis. Donors are given medication to accelerate the production of blood stem cells, which are what transplant recipients need rather than the bone marrow itself. These cells can then be separated from the donor's blood through the same process used for donations of other blood components, such as platelets or plasma. The process is both less risky and much less painful.

The U.S. Court of Appeals for the Ninth Circuit ruled in December 2011 that since compensation for blood components is not prohibited under NOTA, compensation for blood stem cells obtained using apheresis is also legal. (The court did not address the constitutionality of the ban in NOTA.) The U.S. Justice Department asked the court to reconsider the decision, arguing that NOTA covers bone marrow stem cells regardless of how they are obtained, but the court rejected that request.

Economists have long argued in favor of some sort of market system to address widespread organ shortages. According to data from the United Network for Organ Sharing, headquartered in Richmond, there are 10,065 individuals waiting for an organ transplant in the Fifth District, and two-thirds of them have been waiting for a year or longer.

Economic theory predicts that increasing the price of a good will induce more sellers to enter a market, increasing supply. For example, blood banks in the United States regularly compensate people for donating blood plasma, and this has not only prevented a shortage, it has also resulted in a surplus — the United States supplies about half of the world's plasma,

exporting to countries that don't compensate donors.

Researchers Nicola Lacetera of the University of Toronto, Robert Slonim of the University of Sydney, and Mario Macis of Johns Hopkins University conducted a field experiment to see how economic incentives would affect general blood donations, which are often not compensated. They offered gift cards in varying denominations at Red Cross blood drives. They found that donations increased at drives offering incentives, and that effect rose with the value of the reward. Also, donors at those drives were more likely to persuade others to donate with them.

"Based on the results of our study on blood, and given the similarities between blood donation and bone marrow apheresis, I do expect marrow donations to increase when compensation is allowed," says Macis.

Blood and bone marrow are naturally replenished by donors' bodies, but most internal organs are not. Opponents of compensation for all organ transplants have argued that a marketplace for organs that can't be regenerated, such as kidneys, would exploit the poor and the desperate, who would be most likely to face situations in which they feel that selling organs is their only option.

"People deplore the degrading sale, a sale made in desperation, especially when the seller is selling something so precious as a part of his own body," Leon Kass, a professor emeritus at the University of Chicago and the former chairman of the President's Council on Bioethics, wrote in 1991.

Kass acknowledged that allowing for the sale of organs could increase the supply. But Kass and other bioethicists express moral aversion to putting a price tag on a human being. "The idea of commodification of human flesh repels us, quite properly I would say, because we sense that the human body especially belongs in that category of things that defy or resist commensuration," wrote Kass.

Macis argues that the moral objection can go the other way, as well. If two consenting parties agree to a transaction that they believe can make each better off, then one could raise a moral objection to a third party prohibiting that exchange from taking place. In addition to purely economic exchanges, Macis says there are other ways to provide incentives to organ donors. He cites the example of a "priority rule," implemented in Israel and Singapore, which grants registered donors priority on organ waiting lists, reassuring them that their generosity will be repaid if they find themselves in need of an organ.

Although the ruling from the Ninth Circuit is not likely to result in immediate changes to organ donation in the United States other than blood stem cells, it has once again raised the question of how best to solve a supply shortage that confronts patients and doctors daily. **RF**

# JARGON ALERT

## Liquidity Trap

BY RENEE HALTOM

Are there times when the central bank is powerless to stimulate short-term economic growth? Some economists say the economy is currently in such a situation, often called a “liquidity trap.”

The phrase has a nebulous definition in economics due to changes in the underlying theory since John Maynard Keynes first introduced the concept in the 1930s. The broadest definition is a situation in which monetary policy cannot stimulate the economy — the “trap” part — possibly because interest rates have already been pushed to zero. They have been at zero or close to it since December 2008.

A more precise definition of a liquidity trap is a situation in which people have a virtually endless demand to hold cash — an endless demand for liquidity — relative to other assets. In that situation, the central bank’s increases to the money supply fail to translate into increased consumption or investment to get the economy churning because the private sector simply holds on to the cash. The impotence of monetary policy in a liquidity trap is often asserted to justify alternative policies like fiscal stimulus. Yet it would be hard to determine in real time that the Fed’s expansionary efforts are having no effect on the economy given the myriad of competing influences — as a practical matter, it would be knowable only after the fact. Therefore, that definition may not offer much insight for real-time policymaking.

Many economists argue that liquidity traps can’t occur at all. Economic research suggests that central banks are far from powerless when interest rates hit zero. For example, quantitative easing has allowed the Fed to pump the banking system full of excess liquidity to push down lending rates. Additionally, the central bank can effectively ease lending conditions further by creating expectations that policy will remain stimulative, as the Fed has attempted to do since August 2011 by stating that it expected to keep interest rates very low for the foreseeable future. Financial markets appeared to respond positively when each of these policies were announced, suggesting that market participants don’t believe the Fed’s policies to be impotent.

In fact, there is, in principle, no limit to how much money the central bank could create; at an extreme, it could purchase every interest-bearing asset in the economy. Before reaching that point, people would likely start to bid up the prices of nonmoney assets, making investment more attractive and kickstarting economic activity.

What many economists seem to mean when they discuss a liquidity trap is a limit on the central bank’s *willingness* to stimulate the economy further rather than its *ability* to do so. That is, there are costs to monetary expansion, the most obvious being the risk of generating inflation.

Inflation has been contained since the Fed reached the zero bound, but policymakers might, nonetheless, judge that the economy will heal on its own with fewer costs than a recovery encouraged by additional monetary stimulus. For example, some economists, such as Philadelphia Fed President Charles Plosser, have argued that easier monetary policy could cause financial market distortions — making some investments artificially cheap relative to others — and the misallocation of resources down the road.

A central bank’s unwillingness to stimulate the economy further — given its assessment of the costs and benefits of doing so — may be more plausible than the conventional notion of a liquidity trap in which the central bank is literally powerless. Nonetheless, if policymakers judge that further monetary expansion would not be a net benefit to the economy, we may observe conditions that look and feel a lot like what might be expected in the technical defini-

tion of a liquidity trap — namely, persistently weak economic growth despite some strong measures by the central bank.

The evidence on liquidity traps, too, is murky. There are three commonly suspected episodes: First is the Great Depression, but economists Milton Friedman and Anna Schwartz famously noted that the Fed didn’t actually keep monetary policy easy in the mid-1930s. In fact, it inadvertently contracted the money supply due to an incomplete understanding of how a new reserve requirement policy would affect the financial system, making the Great Depression worse. Second is Japan’s “lost decade” of low economic growth in the 1990s (some economists even include much of the 2000s). Many economists, however, have argued that the Bank of Japan, too, became contractionary at points during that period, making it difficult to argue that it tried all it could to boost growth. Finally, some economists argue that we are in a liquidity trap following the 2008–2009 recession, given that we have not experienced a strong recovery despite the Fed’s unprecedented efforts to induce one. Though economic growth has been weak, many Fed policymakers have argued that the Fed is not — and never will be — out of ammunition, should conditions warrant it.

RF



# RESEARCH SPOTLIGHT

## Playing the Waiting Game

BY CHARLES GERENA

Commentators and lawmakers have blamed policy uncertainty for creating a “waiting game” that has made the recession deeper and the recovery slower than it might have been. Business owners may put off investing in a new facility or hiring more salespeople if they don’t know how changes in tax policy, government spending, or regulation will affect their plans. If enough business decisions are delayed, the overall economy suffers.

In a recent paper, Scott Baker and Nicholas Bloom of Stanford University and Steven Davis of the University of Chicago construct their own measure of uncertainty, test how well it corresponds to past changes in the business cycle, and assess its ability to predict future swings. They find that a big jump in their index of policy-related economic uncertainty is associated with significant declines in output, investment, and employment.

Previous studies have investigated potential connections between policy uncertainty and economic outcomes. In a 1991 paper, Dani Rodrik of Harvard University found that firms tend to delay new investments until policy uncertainties are resolved. A 1999 paper by Kevin Hassett at the American Enterprise Institute and Gilbert Metcalf of Tufts University found that uncertainty over the implementation of investment tax credits affects the timing of when businesses invest — they may wait if they think a new tax credit is on the horizon or rush to invest if they anticipate a credit will be taken away.

While these studies identified a relationship between uncertainty and the economy, others have not. For example, a 2011 paper by Edward Knotek and Shujaat Khan of the Federal Reserve Bank of Kansas City demonstrated that not every past spike in uncertainty corresponded to a recession. (See “Around the Fed,” *Region Focus*, Third Quarter 2011.)

Part of the challenge for researchers is determining cause and effect. The same factors can influence both policy uncertainty and the state of the economy at the same time. Similarly, policy uncertainty may contribute to a recession, or merely be a leading indicator of a downturn.

If policy uncertainty does contribute to overall economic uncertainty, what is the strength of that relationship? Factors beyond the control of policymakers can cause apprehension about the economy, such as the rate of technological change and the future path of commodity prices.

The index of policy-related economic uncertainty created by Baker, Bloom, and Davis has three components. The first measures the frequency of references to the

economy, uncertainty, and policy in articles published in 10 major newspapers.

The second component captures the number of federal tax code provisions set to expire in the near future. This can generate uncertainty because lawmakers often don’t reach a decision on whether to renew them until the last minute.

The third component uses the Federal Reserve Bank of Philadelphia’s Survey of Professional Forecasters to measure the amount of disagreement on the future course of consumer price inflation and federal, state, and local government purchases. These macroeconomic variables were selected because they are directly influenced by monetary policy and fiscal policy actions.

“Measuring Economic Policy Uncertainty.” Scott R. Baker, Nicholas Bloom, and Steven J. Davis. Manuscript, Stanford University and the University of Chicago, February 2012.

“The resulting index ... looks sensible, with spikes around consequential presidential elections and major political shocks like the Gulf Wars and 9/11,” the researchers comment. The Lehman bankruptcy, the eurozone crisis, and the U.S. debt-ceiling dispute pushed the

index to record highs.

To determine which policies exert the most influence on uncertainty, Baker, Bloom, and Davis analyze a narrower collection of news articles than those used for the news component of their index, applying search terms like “inflation.” While national security loomed large as a source of uncertainty after the 9/11 terrorist attacks, “extraordinary levels of policy uncertainty in 2010 and 2011 are dominated instead by concerns related to monetary policy and taxes,” note the researchers.

To assess how closely aggregate economic activity moves in response to changes in their uncertainty index, the researchers consider several models using monthly data from 1985 to 2011. They find that when policy uncertainty increases as it did over the last six years, private investment falls, bottoming out at a 16 percent decline within nine months of the spike. In addition, industrial production shrinks as much as 4 percent after 16 months and as many as 2.3 million jobs may be lost in the aggregate within two years.

These findings demonstrate only an association between high levels of policy uncertainty and weaker economic conditions. Still, they “reinforce concerns that policy-related uncertainty played a role in the slow growth and fitful recovery of recent years,” suggest Baker, Bloom, and Davis. **RF**

*The paper discussed in this article can be found at: [http://www.policyuncertainty.com/uploads/BakerBloomDavis\\_Feb3.pdf](http://www.policyuncertainty.com/uploads/BakerBloomDavis_Feb3.pdf)*



# What We Don't Know About Innovation...

We know innovation is important — but do we know how to make it happen?

BY JESSIE ROMERO

**T**he printing press. The steam engine. Penicillin, personal computers, the Internet — these are turning points in history, innovations that have transformed modern life and contributed to an exponential rise in living standards throughout much of the world.

It is a foundation of economic theory that such innovations are the key to long-term economic growth. New ideas and new technologies lead to rising productivity, which leads to sustained increases in per capita income and living standards over time.

As the United States continues its slow recovery from the deepest recession since the Great Depression, restoring the country's "innovation economy" has taken on new urgency. A raft of recent policy proposals from think tanks, trade organizations, and politicians emphasize support for small business, incentives for private-sector research and development (R&D), more federal spending on science, and education and immigration reform as strategies that will lead to more innovation and thus to more growth and jobs.

These policies typically are predicated on a set of beliefs — that small companies are more innovative than large, that more government spending translates into more innovation, and that innovation in general is a phenomenon that can be measured and studied scientifically. But innovation is an elusive concept. A novel idea isn't enough in and of itself; that idea must also translate into profitable products and services, and lead to the creation of new economic value. How and why innovation actually happens — and how to make more of it — are questions that researchers are still trying to answer.

### Sizing up Business Size

In 1979, Apple co-founder Steve Jobs visited Xerox PARC, the innovation lab of the Xerox Corporation. There, he saw the Xerox Alto, the first computer to operate with a mouse and the graphical user interface familiar to today's computer users. Jobs was so excited that he returned a month later with his own engineers, who paid close attention to what they saw. "If Xerox had known what it had and had taken advantage of its real opportunities, it could have been as big as IBM plus Microsoft plus Xerox combined," Jobs said in an interview years later. Instead, the story goes, the nimble, entrepreneurial startup launched the Macintosh and transformed computing while the established, slow-moving corporation failed to realize the commercial potential of what it had developed.

But the story isn't so clear-cut. Apple wasn't actually all that small at the time; the Apple II computer had been a

commercial success for two years, and the company was just a year away from a \$101 million initial public offering (\$279 million in today's dollars), the largest since that of Ford Motor Co. in 1956. By 1983, the year before it introduced the Macintosh, Apple's revenues were \$983 million (more than \$2.2 billion today). And although Xerox failed in its first attempt to market a computer with a graphical interface (a successor to the Alto named the Star), Apple's first attempt to market such a computer, the Lisa, was also a flop. Moreover, while the large company is faulted in hindsight for not realizing the commercial potential of its inventions, the resources it committed to research and experimentation are what helped make innovations like the Macintosh possible.

Small businesses are the beneficiaries of many policies designed to support the next Apple. The Small Business Administration (SBA) administers several programs that help small businesses win federal technology contracts and research grants, and federal agencies are required to award a set portion of their R&D funds to small businesses. The Small Business Jobs Act of 2010 enacted new tax cuts and extended lending programs for small businesses, citing them as "the engine of our economy." And the current administration's *Strategy for American Innovation*, released in 2009 and updated in 2011, includes a number of provisions to help small businesses and entrepreneurs, such as loans, training programs, regional economic development grants, and a promise to aggressively pursue large companies for antitrust violations.

Over the past several decades, smaller businesses have performed an increasing share of R&D in the United States, according to research by Robert Hunt and Leonard Nakamura of the Philadelphia Fed. They found that nearly all of the increase in R&D between 1980 and 2000, a period when private R&D as a share of GDP about doubled, is accounted for by the increase in R&D at smaller firms. Computers and other technologies made it easier for new firms to enter the market and compete against large incumbent firms, and cheaper to develop new products. "We have a body of evidence that a very significant portion of our fairly good outcomes in terms of innovation in the last 30 years was driven by a structural change that favors smaller and younger firms," Hunt says. As Hunt notes, however, that change resulted from new technology, not from new government policies.

The special attention paid to small businesses stems from the belief that they have an inherent innovative advantage over large businesses: They are less likely to have an interest in maintaining the status quo, and they are more responsive and quicker to change. As a result, they have a disproportionate impact on "disruptive" innovation — change that creates an entirely new market — as opposed to large firms, which tend to engage in incremental innovation, some say.

Not every small business matches the popular images of the "inventor in the basement" or the company run out of a garage. The SBA's official definition of a small

business is one with fewer than 500 employees — a definition that covers 99.8 percent of all employer firms in the United States.

Economists have spent decades studying the complicated relationship between market structure and innovation. A large and highly influential body of research, beginning with a seminal 1962 paper by Nobel laureate Kenneth Arrow, argues that competition is more conducive to innovation than monopoly. Arrow showed that because monopolies maximize profit by raising prices and restricting quantities, they have less output over which to spread the fixed costs of innovating, and thus are less likely to invest in new technology. In addition, each firm in a competitive market may have an incentive to innovate in an effort to escape the competition, whereas monopolists don't face the same competitive pressures. But another large body of work suggests that even the mere threat of other firms entering the market might be enough to induce monopolies to act as if they are in a competitive market.

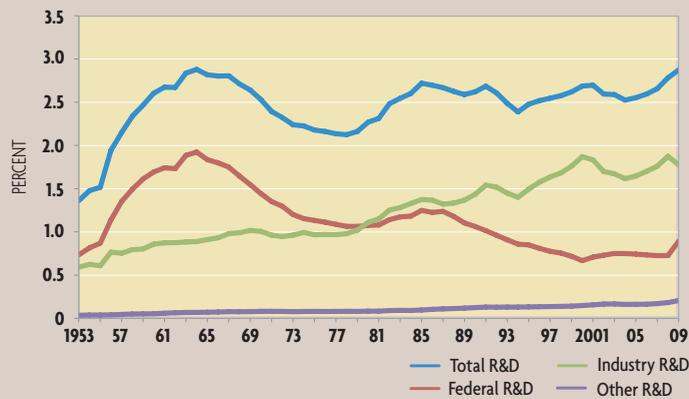
Economist Joseph Schumpeter, who pioneered the idea of "creative destruction" as the engine of capitalism, argued that large businesses — particularly monopolies — are better qualified to innovate because they have the size to take advantage of increasing returns to investments in R&D, they have greater capacity to take on risk, and they have fewer competitors to imitate their invention. Other economists also believe that large companies have greater incentives to innovate, although not necessarily because they are monopolies, as economist William Baumol of New York University discussed in his 2002 book *The Free-Market Innovation Machine*. According to Baumol, a market structure that involves competition among a few large businesses has "innovation as a prime competitive weapon," and thus "ensure[s] continued innovative activities."

This has been true in retail, where just five companies — Wal-Mart, Kroger, Target, Walgreens, and the Home Depot — account for 36 percent of the total sales of the country's 100 largest retailers. Although Wal-Mart's sales are more than the sales of the next four companies combined, it has continued to develop new supply chain technologies that have both increased its own productivity and led to higher productivity in the sector overall.

Large companies also are often the center of "innovation ecosystems," the constellation of suppliers and developers that forms around a central business. Today, Apple — the world's largest publicly traded company, as measured by market capitalization — is the center of just such a constellation. Apple and other large companies invest in key technologies and create stable platforms that make it easier for small companies to innovate,



## R&D Spending as Share of GDP



NOTE: 2009 is the latest year data are available. "Other" includes college and university, nonprofit industry, and nonfederal government.

SOURCES: National Science Foundation; Bureau of Economic Analysis, Haver Analytics; Region Focus calculations

and the ecosystem as a whole can better handle both risk and scale, according to economist Michael Mandel of the Progressive Policy Institute. Small and large companies may have different advantages and incentives to innovate, but both are important to the process.

### Should the Government Spend More?

Whether they own a Mac or a PC, most people use their computer to browse the millions of websites that have sprung up in the past two decades. The modern Internet grew out of ARPANET, a Defense Department project during the 1960s and 1970s to develop a communications network that could continue operating even if various command centers were destroyed. The Pentagon's Advanced Research Projects Agency funded research at private companies and universities nationwide into packet switching (and later the TCP/IP model), and awarded development contracts to numerous small companies, helping to create a market for the new technologies. Today, the Internet is cited as a prime example of the importance of government spending to scientific advances and innovation.

The theoretical case for such spending is strong, particularly in the case of basic research. New knowledge is a "nonrivalrous" good — once an inventor has an idea, that idea can be replicated or put to use by many other people. In addition, there is often a long lag between a new idea and its commercialization. As a result, the full economic value of a new discovery is unlikely to be realized by the discoverer, making the private sector unlikely to invest in a socially desirable amount of research. The patent system is one way to address this "market failure," by awarding a temporary monopoly to the inventor. But strict intellectual property rights can also limit the use of new ideas, making it difficult for researchers to build on earlier work. Another way to correct potential underinvestment in research by the private sector is for the government to fund the research itself, or lower the costs of private-sector investment via subsidies or tax credits.

Since the 1970s, federal spending on R&D has declined as a share of GDP, although the overall level of R&D spending has remained fairly constant due to an increase in private-sector spending (see chart). Because federal spending is more likely, in theory, to be directed toward the type of research unlikely to occur in the private sector, many are concerned that the shrinking federal share hampers the United States' ability to discover the next big thing.

In practice, government spending on R&D isn't always allocated to projects that provide the greatest public good, as political considerations might factor into the decision-making. And while the success stories — such as the Internet; the development of hybrid seed corn, which dramatically increased crop yields in the 1930s; or the mapping of the human genome, which is leading to new medical technologies — are compelling examples of the benefits of government spending on research, those cases aren't necessarily applicable to other projects or to broad policy decisions.

At most federal agencies, R&D spending is a mix of basic research, applied research, and development. (Basic research is to advance general knowledge, without a specific need or product in mind. Applied research is directed toward meeting a specific need. Development is the design and production of actual products.) The exceptions are the Department of Defense, where nearly all spending is for development, and the National Science Foundation (NSF), where nearly all is for basic research (see chart).

But these categories mask the fact that more than 90 percent of this spending, including that classified as basic, could be considered "mission oriented," that is, aimed at fulfilling the specific goals of the funding agency rather than at addressing a market failure, according to research by David Mowery, an economist at the University of California at Berkeley. A successful program thus might not be proof that government involvement is necessarily the way to go. Instead, "the economic effects ... are linked to complementary policies or broader structural elements of the agencies' missions. Apparently similar programs ... may produce very different outcomes in different contexts," Mowery wrote in a chapter of the 2009 anthology *The New Economics of Technology Policy*.

In the case of the Internet, the Defense Department had a unique and large-scale procurement strategy that encouraged new firms to enter the industry and contributed to the rapid commercial diffusion of the new technologies. R&D spending by the National Institutes of Health, one of the agencies that funded the Human Genome Project, tends to have large economic effects since many consumers of new health care technologies are price-insensitive. Because procurement strategies, demand conditions, and other factors vary from agency to agency and from project to project, caution is warranted when generalizing from one project to another.

An additional source of federal support for R&D is private-sector tax incentives. The largest incentive, the

Research and Experimentation Tax Credit, was enacted in 1981 as part of an economic recovery program bill. U.S. companies claimed \$8.3 billion in credits in 2008, according to the National Science Foundation. (2008 is the most recent year for which the IRS has published data.) In addition, about 35 states, including the entire Fifth District with the exception of Washington, D.C., offer tax incentives for R&D. It's unclear, however, what effect such incentives actually have on R&D. For example, in a survey of 20 empirical studies, economists Bronwyn Hall of the University of California at Berkeley and John Van Reenen of the London School of Economics and Political Science concluded that a tax incentive increases R&D by about dollar for dollar. As the authors noted, however, there is a great deal of variation in the results of the studies depending on the methods used to calculate the effect. Hall and Van Reenen also pointed out that at least part of the increase could be due to "relabeling" — companies shifting activities in their budgets in order to qualify for the credit — rather than to genuine increases in investment. Private-sector firms also are likely to use the credits to first fund projects that have the highest rate of private return, rather than those likely to advance basic knowledge. This makes it difficult for policymakers and economists to determine whether the incentives are supporting R&D that firms would have undertaken anyway.

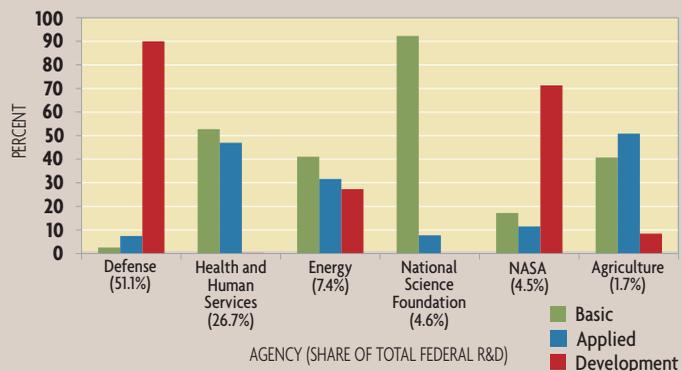
### How to Measure Innovation?

In order to study the effects of policy on innovative activity, economists and researchers must make a crucial assumption: Innovation is something that can be measured. But "the unit of analysis is quite complex," says Julia Lane, senior managing economist at the nonprofit American Institutes for Research (AIR) and the former director of the Science of Science and Innovation Policy program at the NSF. Innovation depends on "a complex system of relationships, the whole process of sharing knowledge," and is characterized by long time lags, Lane says, which makes it difficult to quantify after it has occurred — not to mention difficult to predict in advance.

At the macro level, the effects of innovation are often quantified as "total factor productivity" (TFP). In a basic model, economic growth occurs not only because labor and capital increase, but also because technological advances allow those inputs to be used more efficiently. Technological change cannot be observed directly, however, so the portion of growth in the model that cannot be attributed directly to labor or capital — the "residual" — is called TFP. Estimates of TFP are very sensitive to the assumptions underlying the model being used to measure it, and it's possible that the term might capture factors other than technological change.

Innovation can't be measured directly at the firm or industry level either. Two of the most widely used proxies for innovation are patenting rates and R&D spending; a researcher can compare the number of patents issued or the

### Federal Agency R&D Spending



NOTE: Data are for the top six agencies as a share of total federal R&D spending.  
SOURCE: National Science Foundation, "Science and Engineering Indicators 2012"

amount of spending before and after a policy change to determine the effects of that policy. But such measures are lacking, says Hunt of the Philadelphia Fed. "We have this fundamental data constraint: We know what we want to study, but what we have are a bunch of imperfect measures."

Changes over time in U.S. patent law and in patenting strategies mean that patenting rates might not be comparable across time periods or industries, Hunt says. Prior to the 1990s, for example, it was very difficult to patent software. But once federal courts began treating computer programs like other forms of technology, the number of software patents grew from 1,000 to nearly 25,000 per year, according to research by Hunt and James Bessen, director of the nonprofit organization Research on Innovation. Rather than an increase in innovation, this rise might reflect "defensive patenting," a practice common in some high-tech industries whereby companies obtain a high volume of patents for minor or trivial inventions in an effort to block their competitors or protect themselves against future litigation. (See "Patents Pending," *Region Focus*, Fourth Quarter 2011.)

Economists can try to address the limitations of patents by weighting patents according to how frequently they are cited by other patents, which gives some indication of a patent's value, but patent quality and comparability across time and industry remain challenges for researchers.

Much of innovation policy is premised on the "notion that you can just drop the magic number of R&D in one end, and automatically out the other end comes innovation," says Lane of AIR. But as with patents, an increase in R&D spending does not always reflect an increase in innovation. As a working group organized by the Organization for Economic Cooperation and Development (OECD) stated, "It is probably quite erroneous and misleading for appropriate and adequate policymaking for technology and competitiveness to equate R&D with innovative capacity." The OECD, among others, is currently working to develop new measures of innovation that better capture the complex interactions between policy, firms, and the economy as a whole.

The Congressional Budget Office reviewed more than

three dozen studies that measured productivity changes at the firm, industry, and economy levels using R&D spending as a proxy for innovation. Overall, the studies concluded that additional R&D spending had a positive effect on output and productivity, but the magnitude of the effect varied tremendously. Most significantly, the effect of R&D spending was much greater in studies that compared different companies with different levels of R&D than in studies that followed changes in R&D over time at the same company. This suggests that factors other than R&D spending are responsible for productivity differences seen between companies, and perhaps that increases in R&D might not have a large effect on the economy as a whole.

As difficult as innovation is to measure after the fact, it's even harder to capture in the present. It is only with the benefit of hindsight that the revolutionary properties of a new invention seem inevitable: Johannes Gutenberg didn't know his printing press would lay the groundwork for the Renaissance and the Age of Enlightenment. Farmers were initially reluctant to try the new hybrid seed corn. And technologies with great promise — such as hydrogen-powered cars or Betamax videotapes — may fail to live up to their potential. As economic historian Joel Mokyr of Northwestern University wrote in a 1992 paper, “If every harebrained technological idea were tried and implemented, the costs would be tremendous. Like mutations, most technological innovations are duds and deserve to be eliminated. Yet ... if *no* harebrained idea were ever tried, we would still be living in the Stone Age. Unfortunately, it is impossible to know in advance whether an invention is a true improvement or a dud until the experiments are carried out.”

### Planting the Seeds

“We’re betting our future on the idea that investing in science is going to lead us to more economic growth and competitiveness,” says Lane of AIR. “But the fact is, we don’t know how that works. To say, ‘We’re going to spend money on R&D and 20 years later a miracle is going to occur’ is not a very scientific approach.” Lane and other researchers are working to develop new datasets and data infrastructure that will help scientists, entrepreneurs,

and policymakers better understand the links between investment, innovation, and economic growth.

In the meantime, attempting to plan or direct innovation might not be possible. “Innovation is like a forest,” says Robert Litan, vice president of research and policy at the Ewing Marion Kauffman Foundation, an organization that studies entrepreneurship. “You can make sure the soil is right, and you can fertilize it. You can plant the trees, but you don’t know which trees are going to grow the highest.”

Still, policymakers could have an effect on the fertilizer. Many economists agree, for example, that immigration rules should make it easier for immigrants with high-tech skills to enter the United States and for foreign students to remain here after earning their degrees. More than one-half of new high-tech businesses launched in Silicon Valley between 1995 and 2005 had a foreign-born founder, yet the number of H-1-B work visas for scientists and engineers has been cut by two-thirds in recent years. Opening up immigration “would bring a lot more energy and ideas to America,” says Litan.

Even if the number of H-1-B visas were restored to its previous peak of 195,000 per year in the early 2000s, that represents only one-tenth of 1 percent of the U.S. labor force; there is also a need to train more Americans in the STEM fields (science, technology, engineering, and mathematics). Education policies focused on achievement in these fields, such as higher salaries for top-performing STEM teachers and new community college programs, could help students and workers gain high-tech knowledge or advanced manufacturing skills.

Completing new multilateral trade agreements could also help encourage innovation, as a recent report by the Brookings Institution noted. Companies in export markets must compete internationally and can learn from technological advances in other countries. Finally, a more flexible intellectual property system that can meet the needs of companies of different sizes and in different industries, and that does not reward the filing of trivial or low-value patents, could create better incentives for companies to innovate. Such policy changes are not a guarantee that innovation and economic growth will occur, but they could help to create an environment in which ideas and firms can flourish. **RF**

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# The Dream Behind the Eurozone

## How the Region's Political Aims Led to a Complicated Morning After

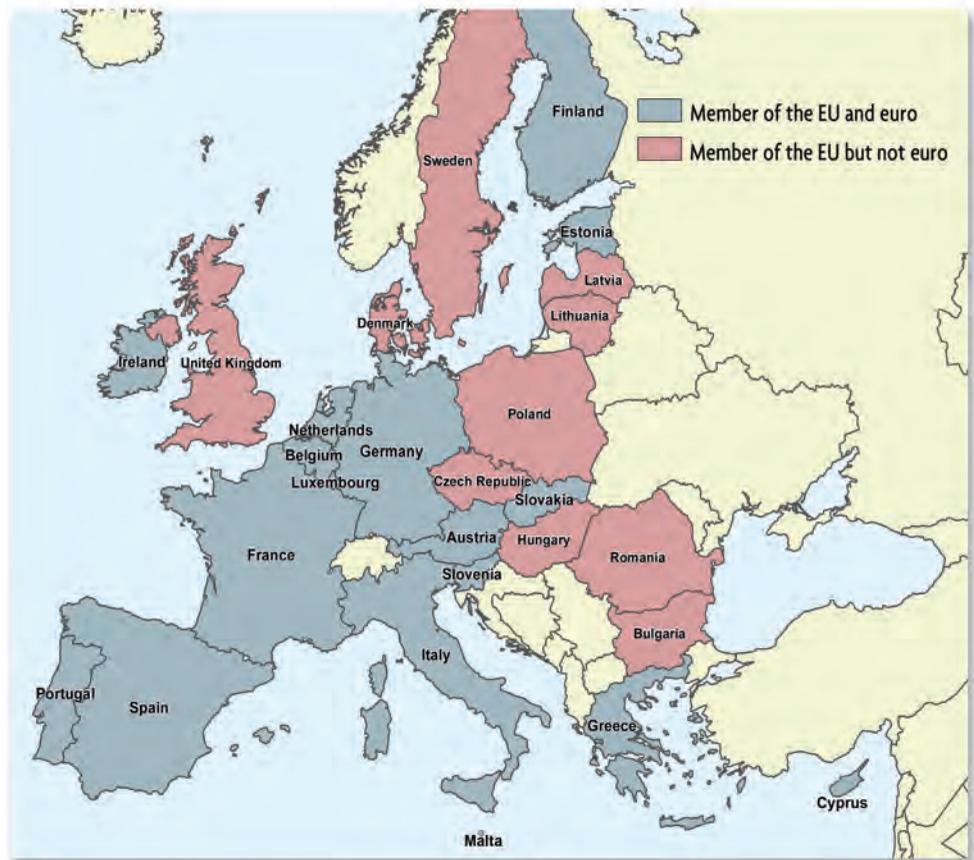
BY RENEE HALTOM

From 27 B.C. to 180 A.D., the territories now covering much of Europe shared some basic governing structures. They had a common legal system that influences Western courts to this day, and even shared a common currency — 2,000 years before the euro came along.

That era of peace, known as *Pax Romana*, replaced two centuries of civil war and conquest. Peace didn't last, of course. After the era ended with the death of emperor Marcus Aurelius, attempts to create a unified Europe came mostly through force, a pattern that persisted right up through World War II. After the war, Winston Churchill called for a revived notion of European political unification to promote lasting peace on the continent.

Hence the idea of a "United States of Europe" is millennia old, and still in progress. Though Europe has achieved far from the degree of political and economic unification of the United States, today it enjoys greater policy coordination and more cross-border trade than ever before in the region's long history.

Still, the viability of Europe's tremendous strides toward economic integration has been called into question during the financial crisis that has afflicted the region since early 2010. Investors have become concerned about the sustainability of current government deficits in light of projections for future spending and anemic economic growth in countries such as Greece, Ireland, Italy, Portugal, and Spain, charging them much higher interest rates for new debt. When the debt of several governments was downgraded, it hurt the financial position of banks that held it, leading to a funding freeze across a continent that was already hampered by the global recession. The problems forced governments to consider dramatic fiscal retrenchments to put their books in order, which have potentially hurt their economies further in the short run and were protested by entire populations.



Europe's economic problems are rooted in long-standing issues. The structural flaws of the European Union, and the euro monetary union in particular, are a byproduct of the political trade-offs required to achieve the last 60 years of economic integration. While many economists remain optimistic about prospects that the euro will pull through its current crisis, most also concede that some of those structural flaws will have to be rectified to ensure the euro's long-term survival.

### Steps Toward Integration

The appetite for political reconciliation in Europe was strong following World War II, especially in France and Germany. To make war "not merely unthinkable, but materially impossible," in the words of French Foreign Minister Robert Schuman, Germany and France, along with Belgium, Italy, Luxembourg, and the Netherlands, in 1952 pooled the production of coal and steel through the European Coal and Steel Community (ECSC), the first formal step toward economic integration in Europe.

Politics aside, integration also had plenty of economic justification. Trade allows two regions to specialize and increase production, improving living standards. Expanding the area of trade with additional countries should increase

those gains. Thus, the next step in integration was to create a common market, a free flow of labor, capital, and goods across borders. Along with the ECSC, other economic “communities” were created by 1957’s Treaty of Rome to consolidate the production of major industries. In 1967, the institutions governing the communities were combined into what later became known as the European Community (EC).

European growth slowed with the worldwide oil crunch of the 1970s, leading to a high-unemployment, low-growth era of “Eurosclerosis.” That general economic malaise bled into the 1980s and spurred hundreds of measures to remove all remaining impediments to the flow of labor and other production factors by 1992.

The stronger the EC grew, the greater was the incentive to participate. Denmark, Ireland, and the U.K. joined the six founding members of the ECSC in 1973, followed by Greece, Portugal, and Spain in the early- to mid-1980s. Austria, Finland, and Sweden joined in 1995 — the region had by then received its current name, the European Union (EU) — with eastern European nations joining in the 2000s after the euro was adopted as the region’s common currency. Today there are 27 members of the EU boasting more than half a billion citizens; 17 of those nations belong to the euro monetary union.

The EU’s diverse membership is divided into what are informally known as the “core” and “periphery” of Europe. The core includes the wealthy northern and central nations, such as France, Germany, and Belgium, while the periphery are comprised of the mostly southern poorer countries, such as Greece, Spain, and Portugal. The key question surrounding integration has always been whether membership would cause their incomes to grow closer together or further apart over time. Research by trade economists Paul Krugman and Anthony Venables in 1990 suggested that integration could at first hurt the periphery nations at the benefit of the core as human capital and economic activity flooded to the latter to take advantage of economies of scale. Eventually, however, they predicted some activity would flow back to the periphery to take advantage of cheaper wages.

Empirically, the effects have been uncertain. The incomes of several periphery nations converged after joining, but researchers haven’t agreed on the extent to which that was due to the virtues of economic integration.

### **(Non)Optimal Currency Areas**

The differences between nations mattered most when it came to adopting a common currency. Europe had debated the costs and benefits of taking that step for decades. By eliminating exchange rate risk and the direct costs of changing currency, a common currency promotes trade and investment within the union. The major downside is that regions belonging to a currency union are bound by a single monetary policy, which can at times be too easy for some nations and too tight for others. That’s mostly a problem when nations experience different economic shocks and business cycles.

Still, losing monetary autonomy could be worthwhile if the economies have other means of adjusting to shocks. That rule of thumb was provided by economist Robert Mundell, currently at Columbia University, who in 1961 came up with criteria for when it makes sense for a group of countries to share a currency — that is, whether the countries are an “optimal currency area” (OCA). Each city and town doesn’t need its own currency, but neither should the entire world share one; his goal was to identify the happy medium.

Although the term “optimal currency area” might sound as if the concept is mathematically precise, the criteria that Mundell set out were more like general guidelines: First, nations in a currency union should have high labor mobility between them to provide adjustment to a boom in one and a slump in another. Second, they should have flexible wages and prices to accomplish the same. Third, they generally should experience similar economic shocks. And fourth, there should be a centralized mechanism, such as taxes and transfers from a common fiscal authority, to help regions adjust to localized shocks and weaknesses. A currency union among regions not meeting these criteria would be at risk for rougher business cycles and living standards that grow apart rather than together, leaving some nations worse off on balance. Mundell won the Nobel prize for his work on OCAs and other ideas in 1999, just as the euro was being launched.

Most economists today agree that Europe did not fit Mundell’s criteria for monetary union compatibility. Labor mobility there remains notoriously low, even now. Just 0.1 percent of the EU population moved between member countries annually in the mid-2000s, compared to 2 percent to 2.5 percent of Americans who moved between U.S. states. That’s not for lack of policy support: A Spaniard can get a job in France with his existing passport, no visa required. (The EU migrant must sometimes pass regional licensing exams, just as a lawyer relocating to the Big Apple would have to take the New York bar exam.)

Unfortunately, the remaining barriers to European mobility are difficult to solve through policy. Barriers to moving in the EU are mostly personal, according to a study produced for the European Commission, the executive body of the EU. Language barriers are at the top of the list, which also includes fears about finding relevant job opportunities and cultural differences between old and new locations. That may mean there is a natural limit to European mobility, and therefore also the adjustment to economic shocks.

And Europe’s shocks are much more “asymmetric” than those experienced by the U.S. states, a currency union success case, according to 1997 research by Barry Eichengreen of the University of California, Berkeley and Tamim Bayoumi, currently at the International Monetary Fund. Even when localized shocks occur in the United States, the centralized system of fiscal transfers helps counter them: Social Security, unemployment insurance, subsidies to nonprofits, and the progressive tax system in general.

Jeffrey Sachs and Xavier Sala-i-Martin, both currently at Columbia University, estimated in 1992 that federal taxes and transfers in the United States eliminated as much as 40 percent of declines in regional incomes. Europe has no such mechanism to address regional disturbances.

Some economists argued that it didn't matter that Europe wasn't quite an optimal currency area. It was possible that currency union could work in reverse, actually causing the euro area to become more fit to share a currency by increasing trade and synchronizing business cycles — in other words, that the attributes of an OCA could, to some extent, be generated “endogenously,” as economists put it. The effects of currency union on trade were an obvious area of focus: If commerce between nations picked up, their economies would naturally move more closely together.

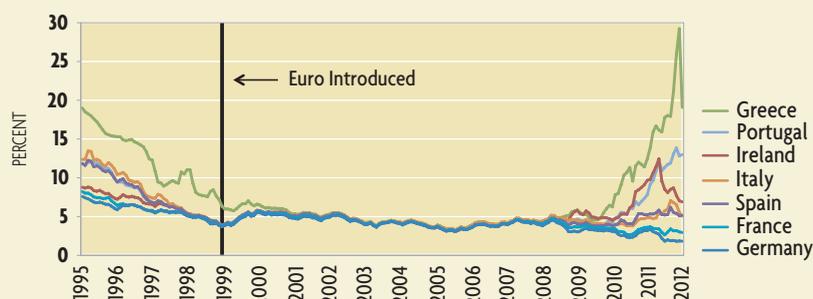
But the theory did not suggest that drastically different economies could be put in alignment by a currency union alone. Even though increased trade resulted from the euro monetary union — somewhere in the vicinity of 20 to 40 percent more since the euro's launch, says economist Andrew Rose of the University of California, Berkeley, who contributed to the endogenous OCA literature — it wasn't enough to make the euro area suddenly qualify as an OCA.

Despite these concerns, a new political impetus for monetary union arose when the Berlin Wall was torn down. “What made the euro feasible was the end of the Cold War and German unification,” says Jacob Kirkegaard at the Peterson Institute for International Economics. When East and West Germany unified in 1990, President François Mitterrand of France wanted to secure a more equal place at the bargaining table with Germany — a goal France had long held, but pushed for even harder given Germany's new economic might. Helmut Kohl, the German “Chancellor of Unity,” as he became known, wanted to overcome that nation's image as a source of instability and three major wars since 1870. He saw monetary union as a way to anchor Germany to Europe. “That's why, in a relatively short period of time, about a year, European leaders negotiated a new and very, very far reaching European treaty,” Kirkegaard says, referring to 1992's Maastricht Treaty to bring Europe's economies closer together in support of a common currency.

The trouble, Rose says, was that the leaders focused on variables that would make the nations look more like an OCA on the surface rather than focusing on the real variables that Mundell emphasized. The Maastricht Treaty established that, to join the euro, countries must converge on nominal indicators — inflation, interest rates, and fiscal measures — that are conceptually different from the real, structural similarities that Mundell said were crucial to ensure nations didn't suffer after having relinquished their monetary and exchange rate policies. “The criteria by which a country gets into the monetary union are simply unrelated to an optimal currency area,” Rose says.

**Figure 1: Government Borrowing Rates**

Monthly 10-year bond yields



SOURCE: European Commission, data through March 2012

Germany, hesitant to wed itself to less frugal countries, urged adoption of the Stability and Growth Pact (SGP) in 1997 to implement Maastricht's fiscal criteria through the threat of sanctions for breaches. Annual budget deficits were to be kept below 3 percent of GDP, and national debt no larger than 60 percent of GDP, with exceptions allowed when local economies were weak.

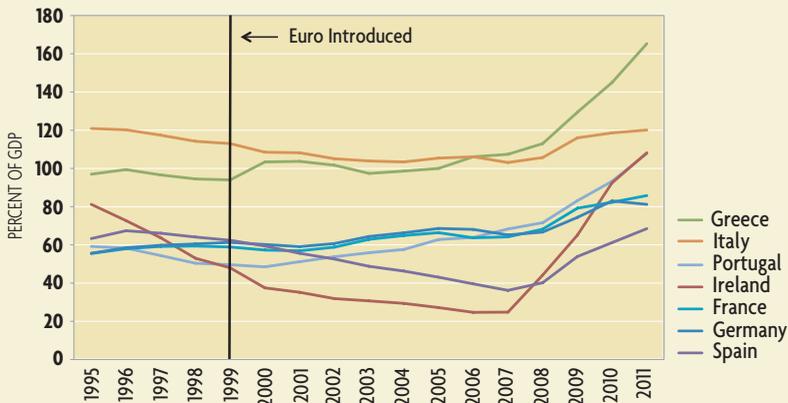
Many economists noted the contradiction between the OCA criteria and Maastricht guidelines, but recognized that the objective of political unity was also a relevant consideration. “The standard of living of the typical European would be lower in the medium term and long term if the [monetary union] goes ahead than if Europe continues with its current economic policies” of integration without monetary union, predicted Martin Feldstein at Harvard, a prominent euro critic, in 1997. “But in the end, it should be for the Europeans themselves to decide whether there are net political advantages of [union] that outweigh the net economic disadvantages.”

### From Calm to Crisis

Commerce denominated in euros began on January 1, 1999, and the currency was released in physical form in 2002. For the euro's first 10 years, the economies' fundamental differences didn't seem to matter. The global economy was functioning well. Annual inflation stayed near the target of 2 percent set by the new European Central Bank (ECB), and, even more remarkably, inflation expectations remained anchored despite the ECB's nonexistent performance history. Banks ramped up cross-border lending, and bank regulation became more aligned (although critics argue that Europe still has a long way to go in this regard). Even during the initial stages of the global financial crisis that started in 2008, the euro seemed to anchor periphery nations by preventing speculative attacks and high interest rates.

A byproduct of the euro's initial success was that the interest rates at which governments could borrow converged toward the levels of Germany (see Figure 1), the economic anchor of Europe, despite large fiscal differences between the countries, says Alberto Alesina, an expert at Harvard University on both Europe and fiscal policy. Countries perceived this as a good thing because it allowed those with very high debts, such as Greece and Italy, to sustain them

**Figure 2: Government Debt**



SOURCE: European Commission, annual data

(see Figure 2). Instead of taking the opportunity provided by low interest rates to get their fiscal houses in order “some countries went on a borrowing binge,” Alesina says. “That was something that economists had not quite expected.”

The fiscal limits in Maastricht and the SGP proved difficult to enforce. Italy, the third largest economy in Europe, and Belgium, the home of the EU capital, were allowed into the monetary union with gross debt almost twice as large as the agreements allowed. Greece falsified official economic data to become the monetary union’s 12th member in 2001, a charge it admitted to in 2004. Within a few years of the euro’s launch, even Germany and France had violated the pact’s deficit limits following the global recession of the early 2000s (see Figure 3). A German official counted in late 2011 that the SGP had been violated 60 times in its 12-year history, with the promised sanctions scantily applied.

Recognizing that the SGP wasn’t serving its intended purpose, it was amended in 2005 to make the fiscal rules more explicit and therefore more enforceable, but the ECB and many economists expressed fears that certain aspects — such as increased reliance on the discretion of the enforcement committee to determine what constituted an acceptable breach of deficit limits — would serve to let governments off the hook. Indeed, Alesina says, “when the financial crisis hit [in 2008], those countries would have been in a better position to deal with it” if they had been living within the treaty’s limits.

When markets began to doubt the viability of sovereign debt in the spring of 2010, Europe had no clear crisis mechanism in place to address these problems. Market volatility reflected that uncertainty, along with growing speculation that Greece and possibly other nations would be forced to leave the euro for being in drastic violation of fiscal rules without agreement to adequate fiscal reform. “Going into the crisis you really only had one institution [the ECB] that was acting on behalf of the entire euro area,” Kirkegaard at the Peterson Institute says. The ECB stepped in as lender of last resort by making large loans to financial institutions to preserve financial market functioning, though it is prohibited under the

Maastricht Treaty from lending directly to governments.

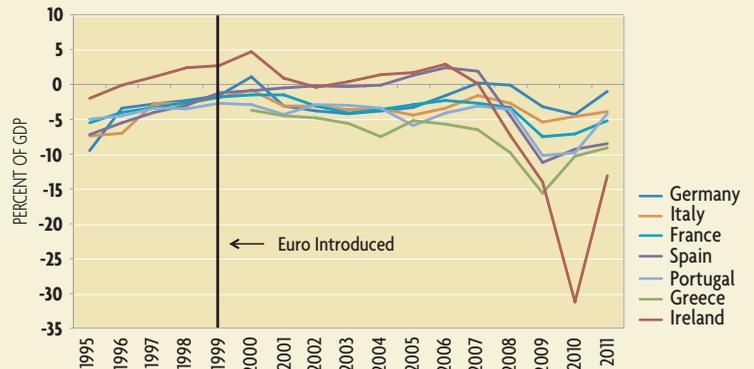
The rest of the crisis response has been marked by one-off interventions and summits to strike deals in hopes of calming markets. The International Monetary Fund and eurozone member states have provided loans to governments in exchange for “austerity” measures to reign in budgets, and EU leaders created two temporary lending facilities guaranteed by member states and the European Commission. In one of the latest deals, holders of Greek government debt agreed in March 2012 to trade their bonds with ones of lower value, reducing the Greek government’s debt — which was by then in excess of 160 percent of GDP — by more than a quarter. It was the largest sovereign debt restructuring in history.

Reassuring markets that governments will avoid default in the short run has been one challenge; reassuring them of governments’ long-run fiscal sustainability has been quite another. In January 2012, most EU states agreed to a “fiscal compact” meant to prevent excessive deficits by writing limits into national constitutions. The compact is “the first step toward fiscal union,” ECB President Mario Draghi told the *Wall Street Journal* in February 2012, a step most European leaders now say is inevitable, but not easy. “Before we move to a fiscal union we have to have in place a system where countries can show that they can stand on their own. And this is the prerequisite for countries to trust each other.”

Previous monetary unions without fiscal union have failed. Examples include the Latin and Scandinavian unions of the 19th century, both of which dissolved after the economic shock of World War I. That’s no coincidence, argued economists Michael Bordo of Rutgers University and Lars Jonung of Lund University in Sweden in several studies comparing currency unions. The available research “tells you loud and clear that monetary unions within nation-states (that are also fiscal unions) do a lot better than international monetary unions,” Bordo said in a recent interview. (See “Interview: Michael Bordo,” *Region Focus*, Fourth Quarter 2011). “My reading of history is that unless they go that way ... they are not going to make it.”

*continued on page 43*

**Figure 3: Government Surplus (+) / Deficit (-)**



SOURCE: European Commission, annual data

# Will helping homeowners help the economy?

## OPEN HOUSE

BY JESSIE ROMERO

Since September 2008, there have been approximately 3.4 million completed foreclosures in the United States, and between 1.4 million and 1.9 million more properties are currently in the foreclosure process. Many foreclosed homes are still sitting vacant: About 1 million more vacant homes are for sale than in the average market of the past two decades. New home construction — usually a source of economic growth after a recession — has been at historic lows for the past four years.

“It’s an economic, financial, and human tragedy that we have let the foreclosure problem fester as long as we have,” says Alan Blinder, an economist at Princeton University and former vice chair of the Federal Reserve Board of Governors.

Opinions differ, however, as to why the problem has continued to fester. On one hand, it’s possible that policy interventions have not gone far enough, and that additional support for underwater and distressed homeowners is essential to the recovery of the housing market, and by extension, the economy. On the other hand, continued government intervention has thus far failed to spur a recovery in housing, and instead might have served only to delay the inevitable bottom of the market. Given the costs and risks of new or expanded programs that attempt to prevent foreclosure, is the best course of action to let the market determine house prices, and allow the strengthening economy to stabilize the housing market?

### Free Falling

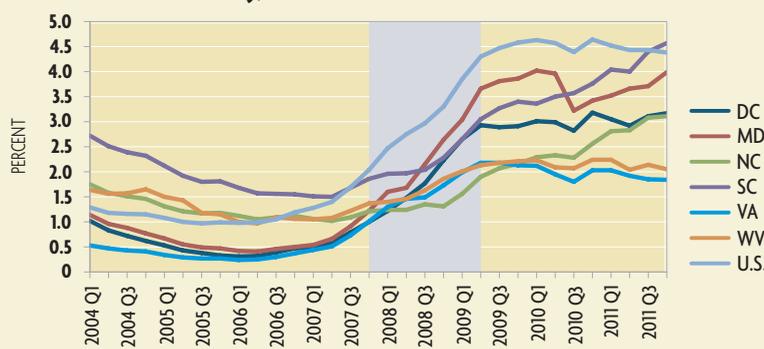
Six years after the housing bubble popped, the market still looks grim. Nationwide, house prices have declined about 33 percent from the 2006 peak. Prices were flat in the fourth quarter of 2011 and were down 3 percent from their level

one year earlier, according to the Federal Housing Finance Agency (FHFA). In the Fifth District, prices declined 2.4 percent during 2011.

The drop in house prices contributed to the wave of foreclosures. Overall, the Fifth District has fared slightly better than the nation as a whole, with about 3.1 percent of homes in foreclosure, compared to 4.4 percent nationwide, according to data from the Mortgage Bankers Association (see chart). In addition to the homes already on the market, there is a looming “shadow inventory” of homes that are more than 90 days delinquent, and thus likely to enter foreclosure, or that have already been foreclosed but are not yet listed for sale. Another 12 million homeowners are currently “underwater” on their mortgages — they owe more than their homes are estimated to be worth — and are thus a potential source of additional foreclosures.

Problems in the housing market are felt throughout the economy. Households have lost more than \$7 trillion in wealth. While estimates vary, research suggests that consumers spend between \$3 and \$5 less for every \$100 lost in housing wealth. Consumer spending is about 70 percent of

**Foreclosure Inventory, U.S. Total and Fifth District**



NOTES: Foreclosure inventory is the percent of mortgages in the foreclosure process at the end of the quarter. Shaded area denotes recession.  
SOURCE: Mortgage Bankers Association, Haver Analytics

GDP, and in previous post-war recessions, it has actually risen slightly, since households try to smooth their consumption. During the 2007-09 recession, spending actually fell almost 2 percent, contributing to the large decline in GDP. The loss of home equity also dampens the effect of monetary policy on the economy, since underwater homeowners aren't able to refinance and take advantage of low interest rates.

In 2005, residential investment made up 6 percent of GDP; today it is only 2.5 percent. The decline is manifest in the construction industry, where the unemployment rate is about 17 percent, and in sectors that depend on demand from the housing market, such as cement and wood products manufacturing.

Some economists believe the housing market also affects the labor market through "housing lock": If homeowners with negative equity are unable to sell their homes, they will not be able to move to areas with better employment prospects. Underwater homeowners are 30 percent less likely to move, according to research by Fernando Ferreira and Joseph Gyourko of the University of Pennsylvania and Joseph Tracy of the New York Fed. But there is debate about how large the housing effect actually is. Research by Sam Schulhofer-Wohl of the Minneapolis Fed suggests that underwater homeowners are actually more likely to move; rather than selling, they simply walk away from the homes. Underwater homeowners also have the option of renting out their homes and then moving.

### Help for Housing

Policymakers have tried to address both the demand and supply sides of the housing market. On the demand side, the First Time Homebuyer tax credit, first enacted in mid-2008 and expanded twice in 2009, offered first-time homebuyers a tax credit of up to \$8,000 and repeat homebuyers a credit of up to \$6,500 for homes under contract before May 1, 2010. Home sales rose 10 percent during the life of the \$29 billion program and the decline in house prices slowed, but the effects were short-lived. The credit appears to have gone largely to people who were planning to buy homes anyway, and it merely changed the timing of their purchase. Sales fell below their previous level in the months after the credit expired, and prices reverted to their downward trend, falling 5.6 percent between May 2010 and February 2012, according to the FHFA.

Historically low interest rates also have failed to boost demand, which perhaps shouldn't be surprising given the state of the economy, says economist Paul Willen of the Boston Fed. "There's a reason people are reluctant to get into housing. In 2005 people were over eager about housing — if they're under eager now, that's understandable."

On the supply side, the goal has been to reduce the number of foreclosures by helping borrowers get mortgage modifications or refinance at a lower interest rate. A modification changes the terms of an existing loan, for example by lowering the interest rate or writing down the principal

amount; refinancing replaces the old loan with a new loan. In theory, mortgage modifications are a win both for homeowners, who get to keep their home, and for lenders, who recover more than they would in a foreclosure. "The dead-weight loss caused by a foreclosure is massive," says Blinder. "If the home can be saved, there is a gain to be shared between the mortgagor and the mortgagee."

The fact that more modifications have not occurred is often attributed to the packaging of loans into mortgage-backed securities. The incentives of mortgage servicers and the investors who own the loans are not always aligned; for example, because it is time-consuming to offer modifications, servicers might have an incentive to move quickly to foreclosure even when a modification would benefit both homeowner and investor. On the other hand, investors tend to oppose refinancing, since refinancing means that mortgage bonds are prepaid, and bondholders must then reinvest their money in lower-yielding investments.

Two government programs, the Home Affordable Modification Program (HAMP) and the Home Affordable Refinance Program (HARP), were implemented in 2009 to reduce these frictions by paying incentives to lenders who agree to offer mortgage modifications, and by refinancing the loans of underwater borrowers whose loans are owned or guaranteed by Fannie Mae and Freddie Mac (government-sponsored enterprises, or GSEs). Both programs have failed to live up to expectations; about 970,000 modifications have been offered through HAMP as of February 2012, compared to initial projections of between 3 million and 4 million, and only about 1 million loans have been refinanced through December 2011, compared to projections of 4 million to 5 million.

Reasons for the low uptake include application processing problems, limited eligibility, and the reluctance of lenders and the GSEs to offer modifications and refinancing options. (Lenders have completed more than 4 million modifications outside HAMP; the terms of proprietary modifications tend to be less generous to borrowers, which might make lenders more willing to offer them.) Both programs were recently expanded to attempt to address these problems, for example by making deeply underwater homeowners eligible for HARP, eliminating GSE surcharges on certain refinance offers, and tripling the incentives paid to investors via HAMP. The Treasury Department also will start paying incentives to the GSEs for principal reductions, although the GSEs' regulator, the FHFA, currently refuses to offer them to borrowers. In April, the FHFA's director indicated that he would consider revising this position. (No decision had been announced at press time.)

Many economists and policymakers believe that the extensions of HARP and HAMP don't go far enough. One option, proposed separately by a Federal Reserve Board of Governors white paper and the Obama administration, among others, is to require Fannie Mae and Freddie Mac to refinance non-GSE loans for underwater borrowers, potentially helping millions of additional borrowers take

advantage of low interest rates. While this proposal would greatly increase the size and the risk of the GSEs' balance sheets, the Board of Governors concluded that the potential benefits — stabilizing house prices, reducing foreclosures, and boosting consumer spending — could likely outweigh the costs.

Another proposal is large-scale principal reduction; for example, Congress could legislate that the GSEs offer write-downs or have the government pay for them across the board. Martin Feldstein, an economist at Harvard University and chair of the Council of Economic Advisers under President Reagan, proposed having the government pay to reduce the principal for every homeowner whose loan-to-value ratio was over 110 percent. He estimated that the cost to help 11 million borrowers would be \$350 billion, writing in a *New York Times* op-ed, “As costly as it will be to permanently write down mortgages, it will be even costlier to do nothing and run the risk of another recession.”

### Into the Unknown

The macroeconomic effects of housing intervention are unclear, however. Economists at the Congressional Budget Office (CBO) and the Massachusetts Institute of Technology recently studied the effects of a hypothetical refinancing program for both GSE and Federal Housing Authority (FHA) borrowers. Their paper projected that the program would not have a large effect on the economy as a whole: About 2.9 million homeowners would refinance, leading to 110,000 fewer foreclosures, a relatively small amount compared to the size of the housing market. The authors also projected that each homeowner would save about \$2,600 in the first year, for a total savings of \$7.4 billion, a small stimulus relative to the size of the economy. Other estimates are much higher, however. Economists at Columbia Business School and the Absalon Project, a mortgage finance consulting firm, projected that expanding refinancing for just GSE loans could reach 14 million borrowers and save \$36 billion. If the program were extended to include FHA and Veterans Administration loans, it could reach 30 million borrowers and save up to \$70 billion.

The challenge is predicting how many borrowers will participate. “It has always been a puzzle in mortgage finance why so few people take advantage of refinancing,” says Willen of the Boston Fed. “They refinance much less than standard analysis would suggest they would.” The participation rate might be especially low at present, even if new programs make it easier to qualify, since borrowers don't have the option to take cash out of the refinancing, according to Willen.

The impact of large-scale refinancing could also be muted by the fact that the money saved by households is money lost to investors who own mortgage-backed securities, as the CBO working paper noted. Losses to investors potentially limit the stimulative effect of refinancing.

There is also considerable debate about the \$25 billion settlement reached in February between the nation's five

largest mortgage servicers and 49 state attorneys general. The settlement sets aside \$3 billion for refinancing and \$17 billion for modifications for distressed homeowners, including about \$10 billion for principal reductions. Compared to 12 million underwater homeowners and \$700 billion of negative equity, the settlement is quite small. The settlement looks larger, however, when compared to 3.9 million seriously delinquent loans, and could reduce the number of such loans by about 10 percent, according to calculations by Bill McBride of the economics blog Calculated Risk. The attorneys general believe that the impact will be amplified if other lenders see that the principal reductions required by the settlement are a cost-effective option, and thus become more willing to offer reductions in the future.

A major concern about principal reductions and other modifications is moral hazard — the possibility that borrowers would purposely default on their mortgages in order to qualify for assistance, or that future borrowers would be more likely to take out unaffordable mortgages since they'll expect to receive assistance in the future. Another problem is one of information asymmetry: It's difficult for lenders to distinguish which borrowers actually need help, or which borrowers are likely to default even after a modification. “It's a big problem from the lender's perspective, because they don't have full information about the borrowers,” explains Urvi Neelakantan, an economist at the Richmond Fed currently studying mortgage modification programs. “They want to help the people who will succeed with assistance, not those who will succeed without assistance, or who will receive assistance and then fail.” About 43 percent of HAMP modifications to date were canceled before the trial period ended, often because the borrower re-defaulted. Of those who went on to receive permanent modifications, nearly one-quarter were more than 90 days delinquent within 18 months, according to the Treasury Department.

Research suggests that such informational frictions are a greater impediment to mortgage modifications than securitization. Christopher Foote and Willen of the Boston Fed, Kristopher Gerardi of the Atlanta Fed, and Lorenz Goette of the University of Lausanne (Switzerland) found that there was no significant difference in the likelihood of modification between securitized and nonsecuritized loans. The reason, according to the authors, is that while lenders lose money in a foreclosure, they also lose money when they modify mortgages for borrowers who would have repaid anyway, or when assisted borrowers go on to default. “While investors might be foreclosing when it would be *socially* efficient to modify, there is little evidence to suggest they are acting against *their own* interests when they do so,” the authors wrote.

The authors' research also suggests that the premise of mortgage modification programs might be faulty. The rationale for modifications is that many homeowners took out “unaffordable” mortgages; if the monthly payment can be lowered, then the homeowner is less likely to default. But

Foote and his coauthors found that the debt-to-income ratio of the mortgage, the typical measure of unaffordability, is a poor predictor of the likelihood of default. Instead, falling house prices, expectations about future prices, and especially the unemployment rate are all better predictors of default. When unemployment is high and income is volatile, a mortgage that is modified to become affordable

today might not remain affordable tomorrow.

The argument for wide-scale principal reduction is based on concerns about the large number of underwater borrowers. It might not be an efficient approach, though. While falling house prices are one factor in the default decision, “most people with negative equity will not default on their mortgages,” Willen says. In a related paper, Willen, Foote,

## For Rent

Prices are falling for single-family homes; there are about 2.4 million on the market, and one-quarter of them are foreclosures. At the same time, rents are rising across the country, and the vacancy rate in multifamily housing has dropped nearly two percentage points since the 2009 peak (see chart). Large-scale conversion of foreclosed homes (called real-estate owned, or REO homes) into rental properties is one option for addressing this apparent mismatch between the supply of homes available for purchase and consumers’ demand for homeownership.

Until now, the Federal Housing Finance Authority (FHFA), which regulates Fannie Mae and Freddie Mac, has been reluctant to allow bulk sales of homes to investors. Fannie and Freddie, together with the Federal Housing Administration, own about half of all REO property on the market. Bulk sales typically require taking a steeper discount on the sale price than selling to an owner-occupant. Selling a portfolio of homes also requires the REO holder to absorb carrying costs such as property taxes and maintenance while it assembles enough properties to make the sale attractive. An additional obstacle has been the lack of financing available to investors. Currently, mortgage products exist for one-to-four family homes and for large multifamily properties, but not for portfolios of single-family homes. Some economists and policymakers have called for government-subsidized financing as a way to encourage investors to enter the rental market.

With millions more foreclosed homes projected to enter the market in the next two years, the FHFA’s interest in REO-to-rental programs is growing. In August 2011, the FHFA issued a call for proposals on designing a rental program. It received more than 4,000 responses. In February, the agency announced the first pilot auction of 2,500 homes for qualified investors and began accepting applications at the end of the month. There is also speculation that government financing will be available in some form. Several large broker-dealers and

private-equity firms are planning to bid, according to *The Wall Street Journal*. The auction is intended to be the first step in a national REO-to-rental program, although no further details have been announced.

The other half of REO properties are owned by banks and other investors. Some banks, including Charlotte-based Bank of America, are exploring selling homes for rental or acting as landlords themselves. Current supervisory policy requires banks to dispose of REO property as quickly as possible, but the Federal Reserve is considering issuing guidance that would give banks leeway to hold REO properties on their books for longer, and thus open the door to a rental program.

While the goal of a rental program would be to reduce the number of homes on the market and thus keep prices higher, a large number of rental properties in a neighborhood might actually lower property values if renters are perceived as less stable occupants or as less likely to maintain their homes than owner-occupants. An increase in the supply of rental housing could also lead to lower rents, reducing households’ incentives to purchase a home.

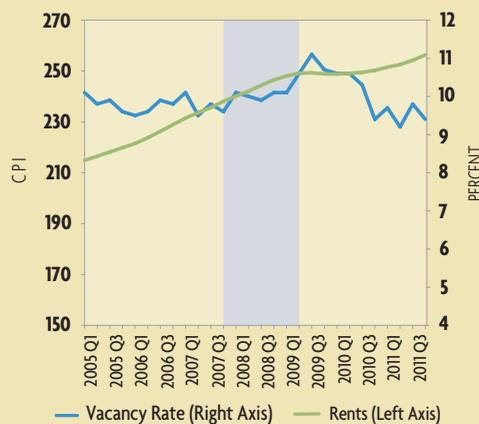
But perhaps the greatest hurdle to a successful rental program — and a factor potentially holding back many institutional investors — is the logistical challenge of managing a large number of single-family homes. “Single-family homes are way too idiosyncratic to have the economies of scale that would work for a large organization,” says Paul Willen, an economist at the Boston Fed.

Despite these concerns, many economists and policymakers believe that an REO-to-rental program is the best option for addressing the current and future supply of vacant homes on the market. “There are at least some investors who think they can make a profit out of it,” says Alan

Blinder, an economist at Princeton University and former vice chair of the Federal Reserve. “If they lose money trying, that’s capitalism.”

— JESSIE ROMERO

**Rental Market Conditions, 2005-2011**



NOTES: Rents are based on the Consumer Price Index (CPI) for shelter. Shaded area denotes recession.  
SOURCES: Vacancies, U.S. Census Bureau, Haver Analytics; rents, Bureau of Labor Statistics, Haver Analytics

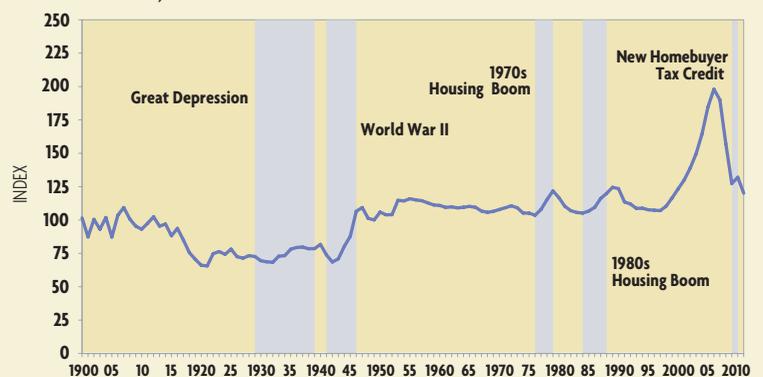
and Gerardi found that negative equity is a necessary — but not sufficient — condition for default. Instead, their work describes a “double trigger” theory: Negative equity must be combined with some adverse shock, such as a job loss or serious illness, before default occurs. Their results suggest that a better focus for policymakers might be helping homeowners cope with job loss or other shocks — and that an improvement in economic conditions might be the best cure for the housing market.

### Does Housing Come First?

Is assistance for borrowers a prerequisite for economic recovery? Some economists and policymakers argue that the policies enacted to date have only delayed the bottom of the market. Although home prices have declined about a third relative to their 2006 peak, they are still above their long-run average (see chart), and allowing prices to fall to the level where supply matches demand might finally restore stability to the housing market. It’s possible that withdrawing government support for housing would leave millions of homeowners even further underwater, or that another drop in prices could permanently spook a large number of potential buyers. But in the long run, “there may be no pain-free path to the eventual righting of the market,” wrote Danielle DiMartino Booth and David Luttrell in a Dallas Fed *Economic Letter*. “Allowing the market to clear may be the path of least distress.”

While many commentators are concerned about the “oversupply” of housing, there might in fact be enough buyers — they just aren’t willing to buy at current prices. Relative to population growth, the number of single-family homes built in the United States during the past decade is lower than during the 1990s. And currently, there are about 2 million fewer new households than would be expected given population growth — eventually, the people who are living with their parents to save money are going to want to move into their own homes. Given the very low rates of new construction during the past four years, pent-up demand for housing might be building. “The population is growing, the economy is growing, and eventually we need a place to put all those people. At some point the value of housing has to go up just because of population,” Willen says.

### House Prices, 1900-2011



NOTES: The 1970s and 1980s booms were largely regional. Between 1975 and 1980, real house prices in California rose 60 percent, affecting national home price indices. Price increases in the 1980s occurred in the Northeast and California. Data are annual through 1953, and quarterly thereafter. Prices are indexed to 1890=100.  
SOURCES: The *New York Times*; Shiller, Robert. *Irrational Exuberance*. Princeton, NJ.: Princeton University Press, 2005.

Those who believe that a recovery in the housing sector is a prerequisite for economic recovery more broadly point out that housing has led the way after previous recessions. Typically, housing contributes about a half percentage point to overall GDP growth in the two years following a recession; throughout much of the current recovery, housing’s contribution has actually been negative. Previous recessions weren’t precipitated by a boom and bust in housing like that which occurred in the 2000s, however, so it might not be surprising that the current recovery is different.

Since the end of 2011, there have been indications that the economy is gaining strength: The unemployment rate has declined from 9 percent to 8.1 percent since September, and consumer spending is on the rise. There are also signs that the housing market might begin to improve in 2012. New housing starts picked up at the end of 2011 and beginning of 2012, and some forecasters predict that prices will finally hit bottom in 2012. In March, the Pending Home Sales Index published by the National Association of Realtors increased 4.1 percent, and is 13 percent above its level one year ago. If these trends continue, a recovery in the housing sector could be the natural consequence of economic growth more broadly. **RF**

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# SKY MILES

## Small Airports Support Flexible Flying

BY BETTY JOYCE NASH

A computer screen displays tiny blue airplanes tracking toward the Washington, D.C., area from across the United States. At the moment, flights are en route from Texas, North Carolina, and Florida. This traffic is headed, not for Dulles International or Reagan National airports, but for Manassas, Va., population 38,000.

Manassas Regional Airport is one of 4,247 publicly owned general aviation, or GA, airports nationwide — airports that handle nonmilitary and nonscheduled flights. There are 57 public general aviation airports in Virginia, of which Manassas is the busiest. In the Fifth District, North Carolina has the most of these, about 62, while Maryland has the fewest, with about 16, according to the 2011-2015 National Plan of Integrated Airport Systems of the Federal Aviation Administration (FAA). Though largely invisible to the public, these airfields play an essential role in the nation's transportation infrastructure.

They enable hassle-free and flexible flying for recreation, business, and public service — including medical evacuations, law enforcement, and disaster relief. What's more, these smaller fields declutter air and runway space at commercial airports such as Dulles, 14 air miles and 18 road miles from Manassas. That leaves commercial airports free to handle higher passenger and cargo volumes. Dulles itself put Manassas Regional on the map, nearly 11 years ago.

### Manassas to Mars

On 9/11, the FAA shut down civilian aviation traffic across the country. When flights resumed at Dulles several days later, only scheduled airline flights were allowed. The other traffic had to go someplace, and that someplace was Manassas.

"We were jam-packed with airplanes," recalls Juan Rivera, director of Manassas Regional. Operations — takeoffs and landings — soared to 800 a day, from roughly 360, and limos

lined up 10 to 12 deep, waiting for Washington VIPs. That went on for weeks, until Dulles was allowed to reopen to GA flights. Manassas can accommodate jet traffic, which requires runway length of about 5,000 feet. Some aviation customers stayed. They liked the convenient and less-crowded Manassas airport, and the lower landing fees.

Before the 2007-09 recession, Manassas handled about 139,000 operations annually. Now, they're at around 100,000. The recession hurt not only airports but aviation in general, including aircraft manufacturing. Fewer planes are flying. But on a Tuesday morning last winter, traffic flowed steadily along the airport's two runways. Student pilots practiced in single- or twin-engines and business jets came and went.

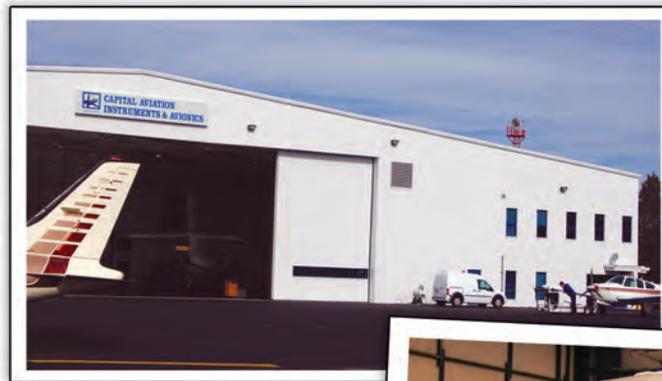
Business leases form the backbone of a GA airport's financial sustainability, according to David Byers of the Aviation Institute at the University of Nebraska at Omaha. "You can only charge the aviation community so much for fuel and parking and other services," he says. It's really all about managing real estate.

Manassas Regional pays its own way through leases, not unusual for a busy general aviation airport outside a metro area. But most publicly owned GA airports can't sustain themselves without a subsidy, especially in remote spots where revenue opportunities are few and far between.

New leases have been a tough sell since 2007, but Manassas Regional's existing hangars are mostly full. There are five flight schools on site, including one for helicopter pilots, and myriad other businesses, including one that will re-upholster or otherwise refurbish plane interiors.

And then there's the small army of Ph.D. scientists working in aerospace at firms like Optical Air Data Systems and Aurora Flight Sciences. Aurora relocated to Manassas Regional in 1991, and flies staff to plants in West Virginia and Missouri and another R&D center in Massachusetts. Although there's no launch pad, the firm's longtime work on its Mars orbiting detection device has sparked the slogan "Manassas to Mars."

For typical GA airports that need public subsidies, economic development provides one rationale. Airports rank at the top of economic developers' must-have lists. If there's no airport nearby, says Virginia Department of Aviation director Randy Burdette, site location scouts lose interest. Without a runway, some businesses just can't do business.



*Capital Aviation Instruments & Avionics services and installs avionics at the Manassas Regional Airport. The 35-year-old firm also refurbishes aircraft.*

*Aviation Dept. Manager Scott Moore pilots the Luck Companies' Beechcraft to dozens of general aviation airports everywhere, mostly in the East.*

### The Time Machine

The Rock Hill-York County Airport in South Carolina is one of several satellite airports ringing Charlotte. The airport is a preferred fly-in spot for companies doing business locally. One of these is Luck Companies, a firm founded in 1923, and headquartered in Manakin-Sabot, Va., near Richmond. Luck Companies includes several businesses — crushed and architectural stone, real estate development, and clay tennis courts — whose clients and suppliers are scattered far and wide. The firm's pilots fly its nine-seat turboprop plane from its own landing strip to dozens of the nation's general aviation airports; it celebrates four decades of business flying this year.

For the types of products and services handled by Luck Companies, often there's no substitute for meeting face to face. When the firm begins business discussions, locating the nearest GA airport is critical, says Luck's aviation department manager Scott Moore. He points to a map studded with thumb tacks representing each GA airport they've flown into.

The plane saves time. Moore routinely flies associates, for example, to the firm's Leesburg, Va., quarry. The trip is half an hour by air compared to two and a half hours by car. Everyone's back by lunchtime.

"What we've created is a time machine," he says, referring to the firm's Beechcraft King Air. The firm has flown more hours than ever during the recession. Moore says that none of the architects, designers, or customers they've flown has failed to place a major order.

The firm prefers the Rock Hill-York County Airport to Charlotte-Douglas International when associates fly to the studio in Pineville, N.C. In Charlotte, Moore says, they would pay a \$150 landing fee; at Rock Hill, they pay \$50. But the fee plays only a minor role. The real attraction is the proximity of the local GA airport and avoiding the traffic jams that can occur at commercial hub airports. Once Moore spent 45 minutes waiting for takeoff in Newark, N.J. That sounds like a trivial delay to today's typical air traveler, but time is money. It's an unheard of holdup in the GA world. And then there are ground delays. At a GA airport, the rental car is ready to go. "At worst, they have to walk in, sign paperwork, get the keys, and walk out. They are at the airport five minutes, no more than that ever," Moore notes.

When Luck opened its studio in Charlotte, the firm ran daily flights to bring in experts who had worked on the

Richmond studio. "We saved over \$300,000 in fees by using the plane," he says. "If they'd had to go down there and spend the night, all that time is on our clock. We're able to get them home for dinner."

A public GA airport also serves just about every county in South Carolina; the busiest handles about 60,000 operations in a year. Greenville Downtown Airport opened in 1928 as the city's original passenger airport, and at the time was conveniently located for textile business travelers. During textile shows in that industry's heyday, the airport's apron was crowded with planes, says airport director Joe Frasher. Annual operations in the late 1970s climbed to 100,000.

Today, 70 percent of the 205 planes based at Greenville Downtown Airport are business planes. This airport, unlike many smaller ones, can fund itself. Times have been better, but traffic picked up in 2011 by 6 percent over 2010.

The much-smaller textile industry may still fly employees to remote plants, but most of the airport's business nowadays comes from firms like Michelin and GE and the Clemson University International Center for Automotive Research. Three flight schools also operate on the grounds and two charter companies base planes there. "Clemson and the Medical University of South Carolina are also in and out," Frasher says.

These less-crowded GA airports also serve another business market: show business. Celebrities of all stripes can come and go without fanfare. Entertainers who play Greenville's venues regularly use Greenville Downtown Airport. One day as Frasher was leaving, he noticed the singer-songwriter Prince waiting for his limo in the airport lobby. The driver, in a mix-up, had headed to the Greenville-Spartanburg International Airport instead. But Frasher says Prince's anonymity was assured, despite his flashy getup: "There was no one to hide from."

These days Eric Ramsdell is preparing for a whopper, the Democratic National Convention, due in Charlotte this September. Ramsdell is airport manager at the Rock Hill-York County Airport. Though convention traffic will spill over to at least three other GA airports near Charlotte, Rock Hill's airport is only 20 minutes by car from the convention center. Ramsdell expects traffic not only from delegates but also from corporate planes as companies from all over the nation converge on Charlotte to host events. Ramsdell especially welcomes this boost after the downturn. Annual operations peaked in 2007 at roughly 45,000; they currently stand at about 35,000.

Private flying also is a secure way for business travelers to work. "They can work in their own airplane without the fear of someone looking over their shoulders," Ramsdell says.

Roughly 11,000 U.S.-based firms of all sizes depend on business air travel, according to the National Business Aviation Association, and most, about 75 percent, use one small turbine-powered plane or its equivalent. Business aviation had begun to build until the recession. Sales of business aircraft went from about \$12 billion to \$27 billion between 2003 and 2008 before falling to \$20 billion in 2009, along with corporate profits, according to Richard Aboulafia, an aviation consultant with the Teal Group Corp. He describes business aviation as a small but high-value niche.

The planes, he says, are not toys of the rich. "A lot of it is corporate workhorse stuff — not having to ship [employees] through a hub and wasting time."

Luck's Beechcraft is such a workhorse. The firm has also used the plane for humanitarian trips: ferrying supplies to a hurricane-damaged island and flying combat-wounded veterans and families. Businesses commonly use company craft for such purposes. After Haiti's earthquake in 2010, business planes flew more than 700 trips, transporting passengers and delivering supplies to relief groups. The Corporate Angel Network matches private corporate jet schedules with cancer patients who need transport.

### The Aviation Dream vs. Reality

Though general aviation grew through much of the last century, it never reached the heights predicted after World War II, when enthusiasts thought American garages would eventually house planes as well as cars. The market for personal aircraft peaked by 1980. The industry faltered, in part, because of legal actions against manufacturers, which drove up prices. GA airplane shipments topped out in 1978 at 17,811; the nadir came in 1994, when 929 single- and multi-engine planes, turboprops, and turbojets were made. (That year, Congress passed product liability reforms to aid the industry's rebirth.)

But innovations could yet transform flight, as demand for

business jets grows, if slowly. The aviation dream is alive and well, certainly for Honda Aircraft Co. chief executive Michimasa Fujino, who in the 1980s began the R&D for "an advanced air-bound Honda." The company employs between 600 and 700 people in Greensboro, N.C., in a half-million-square-foot factory. Spokeswoman Kathleen Bangs says the firm expects certification from the FAA in 2013 for two proof-of-concept planes. A third is to be launched soon. These are known as advanced light jets, comparatively fast, light, and fuel efficient, with a range of 1,300 miles. The jet will use substantially less fuel, which will make it more affordable. Bangs says, "Jet fuel is a huge factor in terms of operational costs."

The market for these and other business jets will recover slowly, says consultant Aboulafia. "Most forecasters, including me, seem to think we'll get back to where we were [pre-recession] in 2015 or 2016."

The GA airports could gain as service to small cities dwindles. Major airlines have cut regional jet use to small cities because of rising fuel prices. It's less expensive for airlines to spread costs among many passengers on a larger jet than it is to fly fewer passengers on a smaller one. In the past two years, 27 cities have lost commercial air service despite these airports' subsidies.

All this may point to increasing charter business, including "fractional" leasing. Buyers may pay for a "share" of time on the jet. Though the number of fractional share owners fell slightly from a peak of 5,179 in 2008 to 4,862 in 2010, that number could bounce back with an overall revival of the small-jet market. The FAA forecasts that the jet fleet — charter planes, among others — will average a growth of 4 percent a year over the next two decades. Flying hours for jets are forecast to average 5.3 percent annual growth from 2012 to 2032, according to the FAA. (In contrast, the number of flying hours for piston-driven planes, the smaller aircraft more likely to be used for recreational flying, is expected to remain flat over the next decade.)

Hank Brown owns the Greenville Jet Center, which handles fuel sales and services, such as arranging charters and operating a flight school, at the Greenville Downtown Airport. "We are going to see more charter business," Brown says. "Every part of aviation was on the increase just prior to the recession."

Between dwindling commercial service, the hassles of security check-in, and flight delays at hub airports, flights in and out of GA airports may present a practical alternative, says Burdette. "Some businessmen will say, 'You know what? My overhead is so high I'll hire an air charter. I can be there quicker and more directly and get home sooner.'" **RF**

*Emporia-Greenville Regional Airport is only one of rural America's general aviation airports. See sidebar on our website.*

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## John B. Taylor

Stanford University economist John Taylor has straddled the worlds of academia and government service, with distinguished, complementary careers in each. His academic work has informed his efforts as a policymaker, and his experience in government has provided insights about potential research questions and how to frame them. The most well-known example of the latter is the “Taylor Rule” — a straightforward, concise formula designed to guide monetary policy and largely remove discretion from the policymaking process — which he developed after working at the Council of Economic Advisers from 1989-1991. Many observers have stated that the Fed and other central banks have, in large measure, implicitly followed the Taylor Rule, though Taylor argues the Fed strayed from the rule in the mid-2000s.

Taylor has been a critic of the Fed’s actions during the financial crisis and the subsequent recovery, arguing that the Fed has unwisely engaged in credit policy, threatening its independence and bringing into question serious constitutional issues about which institutions of government have the power to disburse funds. He also has expressed reservations about the 2009 fiscal stimulus package. While many policymakers and some economists have argued that the “multiplier effect” of those government expenditures was on the order of 1.5, Taylor and colleagues have estimated that it was probably closer to zero or perhaps even negative.

In his most recent book, *First Principles: Five Keys to Restoring America’s Prosperity*, Taylor argues that the key to economic success is economic freedom, which has five defining principles: a predictable policy framework, the rule of law, strong incentives, a reliance on markets, and a clearly limited role for government. He then explains how those principles can be applied in practice to a number of current policy issues.

Aaron Steelman interviewed Taylor in Washington, D.C., on Feb. 24.



**RF:** What were the policy events and theoretical developments in the economics profession that helped lead you to formulate what has been dubbed the “Taylor Rule”?

**Taylor:** I first presented it at a Carnegie-Rochester conference in November 1992. But I would go back quite a bit before that. In some sense, I have been interested in policy rules ever since I started studying economics. I had a professor as an undergraduate at Princeton named Phil Howrey, who taught time series analysis and his approach to macroeconomics was to treat the economy very much as a dynamic system, consistent with what we would today call dynamic stochastic structural modeling. So I got interested in policy from the point of view of feedback rules to stabilize a dynamic economic system, and in many respects my whole research focus has been from that perspective. Early on, I worked on how to design policy rules when you don’t know the model, and you have to do econometrics simultaneously with your policy evaluation. I also did some stuff on optimal policymaking when people are learning about the impact of policy. Later on, I built models with sticky prices and rational expectations in order to evaluate policy rules. And in the 1980s, I was developing multicountry models with the same purpose.

By the late 1980s, it appeared that we had done all this research on policy rules and it didn't seem like the central bank was explicitly following that approach. So I decided it was time to get practical and develop something workable rather than a theoretical policy rule with, say, 20 variables on the right-hand side. Another big change was moving toward using the interest rate rather than the money supply as the policy instrument in the feedback rules. So it goes back a long time, and that rule was part of something I had been looking for for many years. In a way, I did not think of the 1992 presentation as a big deal. I just was trying to find a way to write down something that was consistent with all the research I had been doing but also simple enough and workable enough — and consistent with the way the Fed was thinking about and doing policy, which was focusing on the federal funds rate, even though that wasn't talked about much.

**RF: Could you describe what the Taylor Rule says about how central banks ought to generally respond when the inflation rate deviates from its target?**

**Taylor:** The rule is quite simple. It says that the federal funds rate should be 1.5 times the inflation rate plus .5 times the GDP gap plus one. The reason that the response of the fed funds rate to inflation is greater than one is that you want to get the real interest rate to go up to take some of the inflation pressure out of the system. To some extent, it just has to be greater than one — we really don't know the number precisely. One and a half is what I originally chose because I thought it was a reasonably good benchmark.

**RF: From observing policy actions and now reading the transcripts of FOMC meetings, to what extent, in your opinion, has the Fed implicitly adopted something like the Taylor Rule and when has it deviated from its general framework?**

**Taylor:** The biggest period where the deviations are apparent is the 1970s. It would have been a terrible policy rule if it had been estimated in the 1970s. I never really thought of it as an estimate. I thought of it more as a recommendation. I also think there were significant deviations from the rule from 2003 to 2005, when basically there were rate cuts greater than I think any reasonable interpretation of the rule would suggest. So I think the period when the rule was followed fairly closely was roughly from the 1980s through 2003. The way I think about it is that the Fed's actions have been largely consistent with the rule without using it explicitly. We do know from the transcripts, though, that the rule and other rules have been referred to fairly commonly.

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I have never been to an FOMC meeting but a number of members of the FOMC have talked favorably about it, from Janet Yellen to Charles Plosser, so you know it's out there. In the late 1990s Chairman Greenspan told me that it explained about 80 percent of what they were doing during his tenure, but that doesn't mean that he was looking at it explicitly. And there is evidence that a number of foreign central

banks have acted in ways that are consistent with the rule, which surprised me somewhat because I originally had U.S. policy in mind.

**RF: Empirically, do you observe any shortcomings with the Taylor Rule as it was initially conceived?**

**Taylor:** The worry I have always had, and many people have pointed this out, is that it calls for a response to the deviation of potential GDP from real GDP, and potential GDP is hard to estimate. So there is an inherent uncertainty and it's much worse in emerging market countries where potential growth is hard to estimate — China, for example. So people have various ideas about that. One is to lower the coefficient on the gap. But, of course, if you lower the coefficient too much, then you are not responding adequately when there is a recession, so that seems to me not to be the answer. I basically now say, let's just take an average of various people's estimates of potential growth and use that to calculate the gap.

I think that is the biggest concern. You want central banks to respond to inflation and you want them to avoid large discretionary deviations so they don't create their own instability or inflation. This is related to the issue of the Fed's mandate. I think there should be a single mandate: price stability. But it appears contradictory when the rule has the central bank responding to real GDP. It is not contradictory, however, because it is optimal to respond to real GDP even if you are only interested in price stability because that is indicative of where inflation is going. But that is hard to explain sometimes.

**RF: How much do you think the Fed's close interaction with the Treasury during the crisis — and the central bank effectively conducting credit policy — has compromised the Fed's independence?**

**Taylor:** I think the Fed engaging in credit allocation has been a problem and has led to a sacrifice of its independence. There are many reasons that it happened. But it really doesn't make much difference whether the Fed chose to voluntarily get involved in fiscal policy or if it was persuaded to do so. It makes people question why you need an independent central bank to conduct monetary policy. I also

think it raises some serious constitutional issues about which agencies of government are given the authority to appropriate funds and whether that was violated during the crisis.

**RF: How should the Fed reduce its balance sheet?**

**Taylor:** Well, we can learn from what the Fed did after 9/11, when it increased reserves quite a bit. There was a real liquidity crunch in the markets and it was well within the Fed's role to respond that way. During the worst of the 2008 panic, the Fed also provided funds that increased the balance sheet and if it had stuck to the exit policies that it pursued following 9/11, those reserves would have been reduced pretty quickly. But instead the Fed moved after the panic into interventions in the mortgage market and the medium-term Treasury market. Those actions, it seems to me, raised many precedential issues. In fact, in the early part of 2009, Don Kohn was on a panel with me at a conference; I argued that while the Fed can talk about these temporary interventions during the panic, I would worry that if the recovery is slow, it will continue to do these sorts of things — not because there is a liquidity problem, but just because the economy is still sluggish. Kohn said, no we won't do that. But that, in fact, was what the Fed did.

So now we have a situation where there are massive interventions that are not conventional monetary policy and we need to get away from that. However, I'm not sure the Fed will get away from such policies, because now people are writing papers, including academic papers, which say the Fed can and should do these things: It can have its role in terms of setting the interest rate and it also can use its balance sheet to supposedly stimulate growth. The reason it can do that, people argue, is that the Fed now pays interest on reserves and thus it can ignore the supply and demand for money or reserves when setting the interest rate. I think that is not a good approach. It is very unpredictable and it will inherently raise questions about the independence of the Fed. So I would like the Fed to go back to a world where the interest rate is determined by the

## John B. Taylor

### ► Present Position

Mary and Robert Raymond Professor of Economics, Stanford University, and George P. Shultz Senior Fellow in Economics at the Hoover Institution at Stanford University

### ► Previous Faculty Appointments

Princeton University (1980-1984) and Columbia University (1973-1980)

### ► Government and Business Positions Held

Under Secretary of the Department of Treasury for International Affairs (2001-2005); Member of the President's Council of Economic Advisers (1989-1991); Senior Staff Economist at the President's Council of Economic Advisers (1976-1977); Economic Analyst, Townsend-Greenspan and Company (1978-1981)

### ► Education

A.B. (1968), Princeton University; Ph.D. (1973), Stanford University

### ► Selected Publications

Author or editor of numerous books, including *First Principles: Five Keys to Restoring America's Prosperity* (2012); *Getting Off Track: How Government Actions and Interventions Caused, Prolonged, and Worsened the Financial Crisis* (2009); *Monetary Policy Rules* (editor, 1999); *Inflation, Unemployment, and Monetary Policy* (with Robert Solow, 1998); and *Macroeconomics: Theory, Performance, and Policy* (with Robert E. Hall, 1986); and author or co-author of papers in such journals as the *American Economic Review*, *Journal of Political Economy*, *Journal of Monetary Economics*, and *Econometrica*

supply and demand of reserves. That would prevent this extra instrument from playing such a big role.

The other thing that happened during this episode was that the interest rate got to the zero lower bound. That generated this idea that something else had to be done, that the balance sheet had to increase a lot. That is not the implication. The implication is that when the interest rate is at the zero lower bound, you should make sure money growth doesn't fall. Whatever aggregate you look at, you need to make sure it doesn't decline. That is much different than massive quantitative easing.

**RF: On balance, how effective were the fiscal-policy actions implemented to help the economy recover? If they were relatively ineffective, in your view, were there structural problems in their design that led them not to have the intended stimulative effects?**

**Taylor:** In November 2008 I was asked to testify before the Senate Budget Committee. As sort of a play on words, I said we shouldn't do "temporary, targeted, and timely" policies but rather we should do "permanent, pervasive, and predictable" policies and then I outlined four steps. I thought that approach would have been promising. But in January 2009 a government white paper was issued that argued that the multiplier of a temporary targeted stimulus was going to be 1.5, and that was a big disappointment to me because everything we had been teaching our students over the years suggested that was not the case. I

wrote a paper with some colleagues and we arrived at the conclusion that the effect would be one-sixth of what was estimated. In later research I found that even that estimate turned out to be optimistic. In fact, despite its large size, the 2009 stimulus did not result in much of an increase in government purchases. There were two reasons for that. One, there was virtually no increase in federal purchases of goods and services. Second, the logic that money sent to the states would be used for infrastructure and to hire people to build roads turned out to be flawed. It turns out, the best we can tell, the grants were not used for increased purchases.

Instead, they were largely saved and the states and local governments borrowed less. So while we debated what the multiplier was, the overall effect of the stimulus was probably negative because, to the extent that the states were required to increase transfer payments — in particular, Medicaid — they actually reduced government purchases, including infrastructure.

**RF:** In your most recent book, *First Principles: Five Keys to Restoring America's Prosperity*, you talk a lot about entitlement reform. Could you discuss what you have in mind?

**Taylor:** The proposal is to bring federal spending as a share of GDP to what it was in 2007. It went up a lot from 2008-2010 and according to the budget that was proposed last year, it was going to stay out there at 23 percent or 24 percent of GDP. The alternative proposal is to gradually bring spending back down to 19.5 percent, and thereby undo the binge that occurred during the crisis. That raises the question of what we do about entitlements.

Social Security is, in some sense, easier to deal with because the current program increases the amount paid per beneficiary in real terms by substantial amounts. For example, a 30-year-old today is going to get much more in retirement payments in real terms than a 60-year-old. So what you need to do is to adjust that formula so that the two receive the same level of benefits adjusted for inflation. There is no reason why a younger person should expect to receive more benefits than a person about to retire. If you do that, you basically deal with the Social Security problem. That's my proposal and it is not unique to me, but I think characterizing it in this way seems helpful. The counter to it is that you should get benefits proportional to what you earned over your lifetime, and my question is, what is Social Security really for? I think Social Security was created to make sure you had a good retirement and did not live in poverty.

In terms of Medicare, there doesn't seem to be too much disagreement about how much growth there should be. Roughly speaking, both parties agree that it should not grow much faster than GDP. The difference is how do you do that? One way is that you set the amount each beneficiary gets so that it does not grow too fast and then you have individuals decide what type of insurance they will receive, within limits, of course. And you also effectively means-test it so that you don't have as much growth for wealthier people as you do for poorer people, and you risk-adjust it. So that seems to make sense to me. You are using the market and since you need to control the growth, why not do it in a way that is the least painful for people.

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We need to deal with crony capitalism for a lot of reasons, including maintaining people's faith in the market system. When they see these inherently unfair policies, their trust is naturally eroded.

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**RF:** In *First Principles*, you discuss the dangers of "crony capitalism." Historically, when one thinks of that term it is often used in the context of developing countries where the rule of law is not particularly well established, but you make the case that we also now see it in the United States. What do you have in mind?

**Taylor:** The United States has traditionally been good on this due to constitutional checks that have prevented the government from arbitrarily helping certain groups or individuals. But as economists, I think we didn't emphasize how important those constitutional provisions are. An example is how we thought about the Soviet Union following its implosion. Many people thought that once the new regime abandoned central planning and began to embrace markets everything would be fine, but what has been missing in Russia is the rule of law and that has caused a lot of problems.

Compared to many developing countries, the United States still does not have a significant problem with cronyism, but we are slipping a bit. It is an issue that is hard to explain in the abstract. It is something that almost needs to be experienced to be well understood. Some of the examples of the United States slipping are fairly subtle. The bailouts are one, where we skipped over the bankruptcy code and even when we did use bankruptcy in the case of automobiles, we gave preference to certain creditors who were not next in line. In terms of the way the new health care law is applied, there are a lot of waivers that are being given and the reasons are not transparent. I think the same is true with too big to fail, with more powerful entities receiving protection. So I think cronyism is there and is a real danger. The other part of crony capitalism that economists have talked about is regulatory capture, and I think we have a lot of evidence of that in the case of Freddie Mac. One of the reasons for the success of the deregulation movement with the transportation industry in the late 1970s and 1980s is that people recognized that was a case of regulatory capture.

We need to deal with this issue for a lot of reasons, including maintaining people's faith in the market system. When they see these inherently unfair policies, their trust is naturally eroded.

**RF:** As someone who has spent decades in academia as well as held high-level policy advisory and policymaking positions, what have you taken from your experience in government and how has it influenced your academic work? And how did your academic work influence the way you approached issues as a policy adviser and policymaker?

**Taylor:** The short answer is a lot — and in both directions. As an example, going back to the first Bush administration, in the *Economic Report of the President* we decided that it would be good to write down the advantages of policy rules based on research that we talked about earlier in this conversation. Not everything was adopted, of course, but I think it was useful to get it down on paper for policymakers and their staffs to see. In general, I think having economists in government is a good idea, and that applies to many different positions. When I was Under Secretary of the Treasury for International Affairs, my job was mainly operational but having an economic perspective was very helpful. I had always been attracted to that job, by the way. When I thought about the position I imagined I would be negotiating economic reform agreements with international counterparts, but things turned out to be very different because of 9/11. Instead a big part of the job was setting up a new currency in Iraq and getting terrorist financing under control. It was a fascinating time and a very challenging experience.

When I went back to academia in the 1990s after my experience at the CEA, I might not have come up with the Taylor Rule if I hadn't been in government. That was a process of thinking through something that I believed would help generate policy as well as be generally acceptable to many at the Fed after having observed more closely how the Fed operates. In fact, Alan Greenspan says that the Fed should deserve an assist for the Taylor Rule because of the type of conversations I benefited from when I was in government. My undergraduate teaching also has improved from being in government and having to explain economic concepts to noneconomists. Also, in academia there are so many different things that you can work on, but there are only a few that are really helpful for policy. So you get a sense of where you should focus your attention.

**RF: Has the profession moved too much in the direction of work that ultimately will not have policy implications?**

**Taylor:** There is certainly a place for work that will have no policy implications at all. But I do sometimes think that there could be more research that relates to policy. After my stint in government in the early 1990s, I went back to Stanford and started a series of conferences with the San Francisco Fed. The idea was to get academic monetary economists together with monetary economists involved in the formation of policy. An even better example, of course, that goes back much further are the Carnegie-Rochester conferences. Karl Brunner and Allan Meltzer would consistently try to get topics that academics could work on that would be very practical. I think the work that Brookings does is very much the same way. There is a tendency among academics to shy away from practical or operational policy-related topics, unfortunately. Policy research does not always lend itself to elegant work of the kind that is appealing to

academics and for which the professional rewards are very great. However, the long-run rewards from research on more policy-related topics can be very large. Keynes was not a particularly technical economist but he was interested in policy and his work became very influential among academics because of that. The profession is still trying to formalize many of the things that he wrote in the 1930s.

**RF: What are the big unanswered — or understudied — questions in macroeconomics?**

**Taylor:** I have been saying for a while that the nexus between finance and macro and trying to understand how the monetary transmission process works is very important. It's not like we haven't been trying to improve our models in this direction for a while. The flow of funds data were originally collected for that purpose but I think the progress has been kind of disappointing. To me, it's not just the banking sector, although that's a big part of it. Rather, it's the whole financial system and how it interacts with the real economy.

There is a worry I have about some of the models that we are using in macro, in particular the New Keynesian or dynamic stochastic general equilibrium models. They are in a funny halfway place between fitting some theory and fitting the data. To me, they have prior distributions which are too precise and as a result they pay too little attention to the data. But that's a very general statement and I don't have any alternatives right now. But I think that quantitative macro modeling is an area where more work needs to be done.

**RF: Which economists have been most influential in shaping your research agenda and your thinking about economic policy issues?**

**Taylor:** As I mentioned at the beginning of this conversation, Phil Howrey was important when I was first starting out in economics. He really helped me to begin thinking about macroeconomics in a much different way than if I just had taken a standard undergraduate macro class. I would also say my Ph.D. thesis adviser Ted Anderson, a mathematical statistician who gave me a way to think about models and mathematics in a rigorous way, was very important for my research. On policy issues, I learned a great deal from Milton Friedman, from both reading his work about policy rules which I was very interested in and then being a colleague of his. I have benefitted from a lot of interaction with George Shultz whose experience as a statesman has been helpful to my thinking about policymaking in practice. Alan Greenspan also was an influence. When I first went to work as an economist in Washington at the CEA in the Ford administration he was the chairman, and I liked his approach to data and ways to think about getting deeper into the economic analysis. I later went to work for him at his firm in New York and doing forecasting work there helped me later in my career. There are so many people who I have been fortunate to meet and get to know. **RF**

# The Counterfeiting Weapon

BY KARL RHODES

## Attacks against American currency began in 1776

During the Revolutionary War, Thomas Paine wrote an open letter to British Gen. William Howe to express outrage over the latest Redcoat atrocity. “You, sir, have the honor of adding a new vice to the military catalogue,” Paine charged, “and the reason, perhaps, why the invention was reserved for you is because no general before was mean enough even to think of it.”

What was this new outrage that made Howe seem meaner than Genghis Khan? Firing upon surrendering troops? Abusing prisoners of war? No, worse than that: Howe was printing counterfeit money.

British forces were not the first to use counterfeiting as a weapon of war. “Efforts in war or peacetime to undermine the economies, societies and governments of adversaries by falsifying their money have proliferated since ancient times,” wrote journalist John K. Cooley in his 2008 book, *Currency Wars*.

The British, however, wielded this monetary mace with exceptional skill. Several months before the Colonies declared independence, the British started counterfeiting Continental currency (continentals) aboard the HMS *Phoenix*, a gunboat anchored in New York harbor. By April 1777, New York newspapers were running the following notice: “Persons going into other Colonies may be supplied with any Number of counterfeited Congress-Notes, for the Price of the Paper *per* Ream. They are so neatly and exactly executed, that there is no Risque in getting them off, it being almost impossible to discover, that they are not genuine.”

Plenty of colonists demonstrated their loyalty to the crown by passing counterfeit continentals. Perhaps the most notorious of these Tories was Stephen Holland, a well-respected resident of Londonderry, N.H., who organized an elaborate network of friends and acquaintances, according to the late Kenneth Scott, a historian at the City University of New York who documented Redcoat counterfeiting in his 1957 book, *Counterfeiting in Colonial America*. Holland was captured, but he escaped from prison before the Colonial authorities could execute him.

“Damn him,” said New Hampshire patriot John Langdon, who was helping to finance and fight the war. “I hope to see him hanged. He has done more damage than 10,000 men could have done.”

Was Langdon exaggerating the impact of the British counterfeiting weapon? Benjamin Franklin didn’t think so, according to Scott. “Paper money was in those times our universal currency,” Franklin wrote. “But, it being the instrument with which we combated our enemies, they resolved to

deprive us of its use by depreciating it; and the most effectual means they could contrive was to counterfeit it.” Franklin grasped a nuance that was perhaps lost on Paine and Langdon: Printing *counterfeit* continentals was indeed an instrument of war, but so was printing *genuine* continentals.

The British lost the war, but they conquered the continental. “The artists they employed performed so well, that immense quantities of these counterfeits ... were circulated among the inhabitants of all the States, before the fraud was detected,” Franklin continued. “This operated considerably in depreciating the whole mass, first, by the vast additional quantity, and next by the uncertainty in distinguishing the true from the false.”

Counterfeiting contributed to the complete devaluation of the continental, but the notes probably would have lost their value anyway because the Continental Congress printed enormous quantities of them to fund the war. In a letter to John Jay, president of the Continental Congress, Gen. George Washington noted that “a wagon-load of money will scarcely purchase a wagon-load of provisions.”

### Colonial Counterfeiting

Should controlling the currency be a sovereign right or a provincial prerogative? That question arose some 85 years before the Revolution, when individual Colonies started printing their own money, asserting some independence from Great Britain in the process. Massachusetts printed the first Colonial paper money in 1690.

“As soon as that experiment worked reasonably well, other Colonies joined the game,” says Stephen Mihm, associate professor of history at the University of Georgia and author of the 2007 book, *A Nation of Counterfeiters*. “By the 1730s, I believe every one of the original Colonies had issued paper money.”

These emerging Americans demanded substantial quantities of notes because gold and silver coins (specie) were scarce. Colonial counterfeiters did their best to supplement the specie supply with forged coins made of pewter and debased gold and silver, but it was the proliferation of paper money that begat a new breed of counterfeiters in the New World. By the 1730s, counterfeiting was a serious problem throughout the Colonies, according to Scott. North Carolina Gov. Gabriel Johnston expressed concern in 1735 over “the great Number of Counterfeits, which are gone abroad into all the parts of the Province, by the villanous Arts of wicked and ill disposed persons.”

Great Britain reasserted its power over Colonial paper

money with the currency acts of 1751 and 1764, and “Ben Franklin cited them as one of the Colonies’ major grievances,” Mihm says. But on the eve of the Revolution, American counterfeiting had surpassed British imperialism as the No. 1 threat to Colonial currency.

### Currency Chaos

Following the Revolutionary War, newly minted American citizens greatly preferred coins over paper money because of their bad experience with continentals, both spurious and genuine. “The Continental Congress itself was kind of a counterfeiter,” Mihm quips.

The Constitution gave the federal government the right to “coin money,” and it prevented the states from issuing coins or paper money. The federal government provided some currency through its national banks, but the federal charters of those banks were allowed to expire.

In 1832, when President Andrew Jackson vetoed a bill to re-charter the Second Bank of the United States, the institution was well on its way to developing a common, uniform, and exclusive currency, Mihm says. “But when that bank was destroyed, lots of new state-chartered banks sprung up in its place,” and the shortage of specie persisted. Much like the Colonies had defied British laws, the states circumvented the Constitution by empowering state-chartered banks to issue bank notes.

State-chartered banks proliferated rapidly in the first half of the 19th century, and most of them issued their own brands of notes. By the 1850s, “the money supply became a great confluence of more than 10,000 different kinds of paper that continually changed hands, baffled the uninitiated, and fluctuated in value according to the whims of the market,” Mihm wrote.

While researching his 1995 book, *Illegal Tender*, historian David Johnson of the University of Texas at San Antonio found a story in the *New York Times* from 1862 that claimed 6,000 varieties of counterfeit bank notes were contaminating the money supply. Johnson questions some of the article’s statistics, but he does not quibble with the story’s conclusion that counterfeiting was “a national evil demanding a national remedy.”

Help was already on the way. The Legal Tender Act, signed by President Abraham Lincoln in February of 1862, designated a new national currency as “legal tender for all debts public and private.” These notes employed higher-quality printing, including the use of green ink on the back of the bills that branded them as “greenbacks.” The anti-counterfeiting measures were largely ineffective, but the



*The fine print in the bottom margin of this counterfeit note says, “Fac-simile Confederate Note — Sold Wholesale and Retail, By S. C. Upham, 403 Chestnut Street, Philadelphia.” Upham’s customers could clip off this bottom line and spend the \$5.*

new notes represented a giant step toward eliminating confusion and increasing enforcement. The national currency created economies of scale for counterfeiters, but it also made counterfeiting more risky, Mihm explains. “If you were counterfeiting the notes of the Merchants Bank of Virginia, you were attacking the Merchants Bank of Virginia. If you were counterfeiting greenbacks, you were attacking the Union.”

Confederate leaders also attempted to establish a national currency in the South, but they struggled to produce “graybacks” of sufficient quality and quantity. The poor quality was an engraved invitation to counterfeiters, and several Northern printers responded by forging large volumes of Confederate currency. To circumvent counterfeiting laws, Philadelphia printer Samuel Upham expanded the lower margin of his funny money and added a disclaimer that said, “Fac-simile Confederate Note — Sold Wholesale and Retail, By S. C. Upham, 403 Chestnut Street, Philadelphia.” It was easy for his South-bound customers to clip off this disclaimer and spend the money. (Upham’s shop was one block from Independence Hall and directly across the street from the building that had housed the Second Bank of the United States.)

Upham and a New York printer, Winthrop Hilton, openly advertised their Confederate facsimiles in much the same way the British had promoted their counterfeit continentals during the Revolutionary War. U.S. government officials did not actively encourage the counterfeiting of Confederate money, but they allowed Northern printers to continue the practice. At one point, however, they falsely accused Hilton of printing real Confederate currency and smuggling it to the Confederate government. He was arrested but never prosecuted, and after they released him, he continued his counterfeiting enterprise with renewed zeal.

“I now felt pretty certain that I would no longer be interrupted: I had even persuaded myself that my avocation was patriotic,” Hilton confessed in a *New York Tribune* story that



*This bogus greenback came from a plate engraved by Ben Boyd, one of the best American counterfeiters of the 19th century. His associates tried to steal Abraham Lincoln's body and use it to ransom Boyd from prison in 1876.*

was withheld from publication until his death in 1906. "Had not the British Government authorized or connived at the counterfeiting of our Revolutionary currency, as a war measure?"

According to Hilton, printers in New York, Boston, and Philadelphia (including Upham) produced hundreds of millions of spurious Confederate notes, initially circulating them through newspaper vendors. Hilton expressed no sympathy "for the slave-holders, planters, and brokers who sold their crops for worthless notes; but for the poor whites and the small negro dealers who were deceived by [the bogus bills], I never ceased to entertain the keenest regrets."

Before the end of the war, Confederate money became nearly worthless, and many Southerners were conducting business with the new national currency of the North, Mihm says. "The greenbacks were in some cases conquering the South before the Union soldiers got there."

### The Secret Service

According to Secret Service lore, Secretary of the Treasury Hugh McCulloch received Lincoln's approval to create the agency on April 14, 1865, the same day Lincoln was assassinated. It would be many years, however, before the Secret Service started protecting presidents. In 1865, the new agency was charged only with catching counterfeiters.

The first chief of the Secret Service, William P. Wood, had been superintendent of the Old Capital Prison in Washington, and about half of his early Secret Service recruits had criminal backgrounds, according to Johnson.

"They were effective because they hired operatives who

were connected with the underworld," Johnson says. "When they went out on the street and worked a case, they were talking to their friends and acquaintances of long standing." Lacking official police powers, Wood's operatives often made citizens' arrests during sting operations that would qualify as entrapment by today's standards.

Wood left the agency in 1869, and the Secret Service abandoned his questionable tactics, but the agency continued to rely heavily on confidential informants and undercover operations. The most famous of these took place in 1876, when a Secret Service informant infiltrated a gang of counterfeiters plotting to steal Lincoln's body from its tomb in Springfield, Ill. The gang planned to use his remains to ransom their highly skilled engraver, Ben Boyd, from an Illinois prison.

"Ben Boyd was probably worth his weight in gold to the counterfeiters," Johnson says. "He may have been the best engraver of counterfeit notes in the 19th century." Working with Pinkerton detectives, the Secret Service thwarted the plot just as the

counterfeiters were sliding Lincoln's coffin out of its marble sarcophagus.

In the decades that followed, the Secret Service maintained its zealous pursuit of counterfeiters and its zero-tolerance policy toward anything that remotely resembled U.S. currency. The agency confiscated artists' renderings of money, advertising leaflets that looked like cash, even 160 boxes of play money from R.H. Macy's department store.

"It wasn't the play money per se as much as what it symbolized, which was a disrespect for the national currency," Johnson explains.

The zero-tolerance policy seemed to work. In 1911, the *New York Times* quoted a government estimate that only 0.001 percent of the money in circulation was counterfeit. Johnson concedes that this number may have been overly optimistic, but he says there is no doubt that "the Secret Service was so effective that counterfeiting of the 19th century type was no longer a viable occupation."

### Communists and Nazis

The Secret Service may have won the war against counterfeiting in the United States, but growing international demand for U.S. currency presented new threats from abroad.

Soviet Premier Joseph Stalin, for example, ordered his intelligence service to counterfeit \$100 bills in the late 1920s, according to a 1984 article by Arnold Krammer, professor of history at Texas A&M. The quality of the Soviet counterfeits was excellent, but their distribution network

was severely flawed. The operation started to unravel in 1930, when Berlin police seized a huge cache of the spurious notes at a German bank that the Soviets were using as an international distribution center. Two years later, large quantities of the bogus bills surfaced in Chicago after con man Hans Dechow (aka Count von Buelow) persuaded some local gangsters to launder the money during the height of the Christmas shopping season. Eventually, the gangsters, the count, and their communist suppliers landed behind bars.

The most famous case of government-sponsored counterfeiting occurred during World War II, when the Nazis identified skilled printers and engravers among concentration camp prisoners and brought them together at the Sachsenhausen concentration camp. Under constant threat of death, the prisoners learned the counterfeiting trade and printed millions of bogus British notes of such high quality that they fooled bank officials in England and Switzerland for a while. The Nazis used them to help fund the war. They also attempted to counterfeit American dollars, but Allied Forces closed in on them before they could circulate any forged greenbacks.

The use of counterfeiting as a weapon of war has not been limited to Nazis, Redcoats, and communists. There are some reports that the United States counterfeited dong, the North Vietnamese currency, during the Vietnam War. Certainly, U.S. forces dropped many millions of leaflets over North Vietnam, including parodies and close approximations of North Vietnamese currency, but it is not clear whether any of those leaflets were passable dong. Versions that came close featured detachable propaganda messages on the sides of the notes, a ploy reminiscent of Upham's counterfeiting dodge during the Civil War.

The United States may have lost the shooting war in Vietnam, but it won the currency war. Today, most Vietnamese people prefer dollars over dong, especially for storing wealth and making large purchases. U.S. currency remains popular in much of Southeast Asia. Dollars are banned in North Korea, but the North Korean government has counterfeited \$100 bills for its own use, according to a

joint study released in 2006 by the Federal Reserve, the Secret Service, and the Treasury Department.

"Since 1989, the U.S. Secret Service has led a counterfeit investigation involving the trafficking and production of highly deceptive counterfeit notes known as supernotes," the report stated. "The U.S. Secret Service has determined through investigative and forensic analysis that these highly deceptive counterfeit notes are linked to the Democratic People's Republic of Korea (DPRK) and are produced and distributed with the full consent and control of the North Korean government." Internationally, from 1996 through 2005, the public received approximately \$22.4 million in supernotes, and the Secret Service seized approximately \$50 million in supernotes. (The Secret Service declined to update these numbers or provide further information about its supernote investigation.)

With \$1 trillion of U.S. currency circulating worldwide, even a large counterfeiting operation may seem more like a numismatic nuisance than a weapon of war. But Secret Service agents aggressively pursue all counterfeiters, whether they produce highly deceptive supernotes or easily detectable inkjet knockoffs. Lessons learned from economic history give them little choice.

In essence, the level of counterfeiting is a function of the value of currency relative to the cost of counterfeiting it, both the production cost and the risk of getting caught and punished. That's why the Treasury Department began adding significant new security features to U.S. currency in 1996. These security enhancements have driven up the production cost of counterfeiting, and stronger enforcement by the Secret Service has increased the risk of getting caught. These dual deterrents have limited the counterfeiting of U.S. currency to low levels. The joint study by the Federal Reserve, Secret Service, and Treasury Department concluded that less than 0.01 percent of Federal Reserve Notes in circulation worldwide were counterfeit in 2005. That's not as stunning as the government estimate from 1911, but it does indicate that U.S. currency stands strong against all enemies foreign and domestic — for now. **RF**

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# Economic Thinking in an Age of Shared Prosperity

**GRAND PURSUIT: THE STORY OF ECONOMIC GENIUS**

BY SYLVIA NASAR

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REVIEWED BY THOMAS M. HUMPHREY

A distinctive feature of the modern capitalist economy is its capacity to deliver sustainable, ever-rising living standards to all social classes, not just to a fortunate few. How does it do it, especially in the face of occasional panics, bubbles, booms, busts, inflations, deflations, wars, and other shocks that threaten to derail shared rising prosperity? What are the mechanisms involved? Can they be improved by policy intervention? Has the process any limits?

The history of economic thought is replete with attempts to answer these questions. First came the pessimists Thomas Malthus, David Ricardo, James Mill, and his son John Stuart Mill who, on grounds that for millennia wages had flatlined at near-starvation levels, denied that universally shared progress was possible. The problem was seen to be labor's prolific reproductive capacity, which condemned the mass of humanity to bare subsistence living. An "iron law of wages" dictated that temporary wage rises above subsistence equilibrium would trigger the very population growth that eliminates the wage discrepancy. Similarly, transitory wage declines below subsistence equilibrium produce starvation and population shrinkage until wages return to their subsistence equilibrium along a perfectly elastic long-run labor supply curve.

Karl Marx and Friedrich Engels accepted the iron law of wages, albeit without its Malthusian trappings. Unwilling to blame poverty on labor's inability to prudently keep its own numbers in check rather than upon its exploitation by capitalist managers, they claimed that capitalists, by threatening to replace employed hands with idle ones drawn from "the reserve army of the unemployed" huddled at factory gates, could force labor to accept subsistence wages while appropriating all surplus value produced by labor for themselves. To Marx and Engels, capitalism creates great wealth, but only for the capitalist 1 percent who seize it from its rightful owners.

This picture changed after the 1840s and '50s when rises in the British

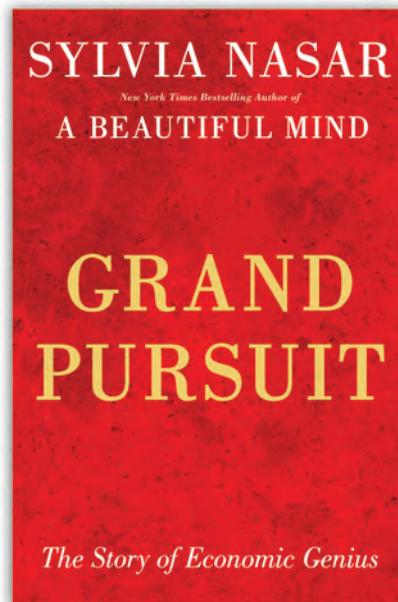
workingman's living standards signaled the demise of the iron law and forced economists to recognize and explain the phenomenon. Britain's Alfred Marshall, popularizer of the microeconomic demand and supply curves still used today, was among the first to do so. He argued that competition among firms, together with their need to match their rivals' cost cuts to survive, incessantly drives them to improve productivity and to bid for now more productive and efficient workers. Such bidding raises real wages, allowing labor to share with management and capital in the productivity gains.

Marshall interpreted productivity gains as the accumulation over time of relentless and continuous innumerable small improvements to final products and production processes. Joseph Schumpeter, who never saw an economy that couldn't be energized through unregulated credit-financed entrepreneurship, saw productivity gains as emanating from radical, dramatic, transformative, discontinuous innovations that precipitate business cycles and destroy old technologies, firms, and markets even as they create new ones. Schumpeter's outcome, however, was much the same as Marshall's, namely an ever growing, ever more affordable volume of goods whose steadily falling prices enable all income classes, particularly the poor, to share in their consumption.

Marshall and Schumpeter highlighted innovation and technological advance. Other economists, notably Irving Fisher, itemized additional necessary conditions — monetary and price level stability, absence of trade barriers, an economic climate conducive to entrepreneurship (recognized also by Schumpeter) — required to ensure that the capitalist machine yielded perpetual, universally shared progress.

With these additional ingredients incorporated into it, the augmented Marshall-Schumpeter model prevailed until the interwar period. Then came the destruction, mass unemployment, poverty, and destitution wrought by two world wars and the Great Depression. Capitalism came under fire, and confidence in the validity and relevance of its explanatory model waned.

Here again economists came to the fore. They devised powerful new theories to diagnose the economic devastation and to prescribe policies to remedy it so that capitalism could be



restored to its former prowess. Such novelties as Fisher's compensated dollar plan to stabilize the general price level by adjusting the gold content of the dollar, his monetarist theory of the business cycle as due to unanticipated fluctuations in the rate of change of the price level, his famous debt-deflation theory of great depressions in which attempts to retire nominal debt result in money stock destruction and price level declines that perversely raise real debt burdens, and his 100 percent reserves proposal all date from this era. So do John Maynard Keynes' ideas of the superiority of domestic price level stability over foreign exchange rate stability, of the liquidity trap, of investment and government spending multipliers, and of the efficacy of fiscal stimulus. Finally, there was Schumpeter's theory of the tax state and his capital levy proposal. All these innovations to economic theorizing were designed to put the derailed capitalist cornucopia back on track. Hard times called for imaginative responses. Economists were glad to oblige. In this way, economic theory contributed to economic progress.

Economic reasoning came to the aid of progress again at the end of World War II. Keynes and others, having studied the disastrous German reparations debacle after World War I, vowed to replace punitive reprisals on the defeated nations with generous recovery assistance. Both theory and experience suggested that such assistance would benefit victor and vanquished alike. The result was the Bretton Woods system, World Bank, International Monetary Fund, and the Marshall Plan, all of which witnessed the launching of the long postwar global expansion of 1946-2006.

Sylvia Nasar, a professor at the Columbia Graduate School of Journalism, former economic correspondent for the *New York Times*, and author of Nobel laureate John Forbes Nash Jr.'s biography entitled *A Beautiful Mind*, the only mathematician/economist's biography ever made into an Academy Award-winning movie, traces the foregoing developments and much more in her beautifully written and intellectually compelling account of the evolution of economic doctrines. (The "grand pursuit" of her title refers to the quest to discover growth's mainsprings, "economic genius" to those who found them or at least advanced the search.) As a history of economic thought, however, Nasar's book, though completely captivating, is somewhat idiosyncratic and unconventional. Unlike standard histories, it focuses on just a few key individuals — Marx, Marshall, Schumpeter, Fisher, Keynes, Friedrich Hayek, Joan Robinson — writing during the period circa 1850-1950, but says relatively little of economists practicing before or since. Both Mercantilist and Physiocratic Schools are omitted. And British Classics such as David Hume, Adam Smith, David Ricardo (except for his iron law of wages), and Henry Thornton get short shrift, as do neoclassical marginalists William Stanley Jevons, Leon Walras, Carl Menger,

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**Nasar's command of theory is adequate to her task and sufficient to satisfy economists while remaining completely accessible to the general reader.**

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Knut Wicksell, and business cycle pioneers such as Clement Juglar and Wesley Clair Mitchell. Modern analysts including Robert Lucas, Thomas Sargent, James Tobin, Robert Solow, Franco Modigliani, Don Patinkin, Michael Woodford, and many others receive nary a mention. True, Milton Friedman makes an appearance, but mainly as

a young Keynesian in the U.S. Treasury in the early 1940s where he devised income tax withholding at the source in order to facilitate the Treasury's quick receipt of tax revenues. Curiously, little is said of Friedman in his later role as the leading monetarist critic of Keynesianism, the Federal Reserve, and big government. Likewise, little is said of Hayek's profound postwar analysis of the price system as a market coordination, discovery, and information assimilating/synthesizing/economizing mechanism, although much is said of his *Road to Serfdom* critique of statist planning and control. Similarly, Paul Samuelson's numerous pathbreaking contributions to theory are downplayed in order to highlight his erroneous prediction of the U.S. economy's lapse back into depression following demobilization at the end of World War II. And the formulators and developers of recent rational expectations, real business cycle, and New Keynesian dynamic stochastic general equilibrium models are totally ignored.

In place of the missing economists, Nasar substitutes such noneconomists as Charles Dickens, the British novelist/journalist obsessed with the Victorian problem of eradicating poverty; Henry Mayhew, a British investigative reporter whose 88-part newspaper series definitively described the condition of London's poor, circa 1850; and most notably Beatrice Potter Webb, a founder of both the London School of Economics and the Fabian Society. It was Webb who, with husband Sidney, hatched the idea of a tax-financed government social safety net both as a solution to the poverty issue and as a partial corrective of inequality arising from capitalist growth, thus paving the way for Britain's cradle-to-grave welfare state of the 1940s, '50s, and '60s. But perhaps Nasar's most puzzling selection is British economist Joan Robinson, who, after co-inventing (with E.H. Chamberlin) the theory of imperfect, or monopolistic, competition in the 1930s, later renounced that seminal work to become a sympathizer of the communist regimes of Stalin and Mao in the Soviet Union and China, respectively. It's hard to see how Robinson fits into Nasar's theme of the link between economic ideas and rising living standards.

Nasar's unconventional treatment is noteworthy on two further counts. First, in contending that economic thought contributes to economic progress, she comes perilously close to implying that the former causes the latter, as if mere theorizing about progress makes it so. To this reviewer, the direction of causality is exactly the reverse: Technical advance and entrepreneurial initiative drive material

progress, which then stimulates improved economic theory to explain and rationalize the process. Wal-Mart, Apple, and Target, as well as the steel, rail, auto, aircraft, radio, TV, and computer industries, all emerged as the brainchildren and products of the efforts of their creators, not because economists anticipated them beforehand. Second, contrary to standard thought texts, Nasar focuses primarily on the personal histories — the lives, times, eccentricities, and experiences — of her protagonists and only secondarily on their contributions to economic analysis. In sum, she is long on biographical detail, but relatively short on theory. While these characteristics might seem to make her book more suitable to the general reader than to professional economists, such is not the case. Her command of theory is adequate to her task and sufficient to satisfy economists while remaining completely accessible to the general reader. This is especially true of her chapters on Schumpeter, Fisher, and Keynes — the strongest analytical chapters of the book.

Nasar's comparison of Fisher and Keynes highlights the resilience of their ideas, which continue to resonate in policy discussions today where concepts like monetarism, fiscal stimulus, zero interest rate bound, liquidity traps, multipliers, debt leveraging and deleveraging, debt-deflation cycles, fixed vs. flexible exchange rate regimes, gold vs. fiat paper standards, external vs. internal devaluation, sticky nominal wages, etc., are bandied about with abandon. In the 1920s and early '30s, Fisher and Keynes were allied in their monetarism. Both contended that misbehavior of the money stock causes not just inflation and deflation but also fluctuations in output and employment. Both believed that causality runs from money to prices to real activity, with disturbances to activity resulting from the stickiness of nominal wage and interest rates in response to price level changes. Fisher even estimated an empirical relationship between price changes and unemployment, thus anticipating the famous Phillips curve (although unlike A.W. Phillips, he traced causation as running from price change to unemployment rather than the reverse). Both Fisher and Keynes held that money could not be trusted to take care of itself but needed deliberate management by central banks through discount window lending and open market operations. And both contended (1) that policy should aim at stabilizing domestic prices instead of currency exchange rates, and (2) that fixed exchange rate regimes (including the gold standard) are inferior to floating rate regimes from a stabilization standpoint because they deny a nation the power to govern its own money stock, price level, and nominal spending independently of other nations. For that reason, Keynes criticized Britain's 1924 return to gold at the fixed prewar parity — a parity that necessitated painful domestic price deflation ("internal devaluation") and a slump in real activity to correct the pound's overvaluation. Likewise both he and Fisher applauded President Roosevelt's 1933 decision to depart from the gold standard and to let the dollar depreciate on the foreign exchanges.

Both saw their predictions validated when the dollar depreciation, which rendered U.S. goods cheaper in foreign markets, helped spark the partial recovery of 1933-37.

Fisher and Keynes parted company in the mid-1930s when persistent mass unemployment seemed impervious to monetary remedies. Fisher, while continuing to advocate monetary policy as the only way out, nevertheless discovered excess leverage, or overborrowing, as a new obstacle to policy's effectiveness. His debt-deflation theory explained how overleveraged borrowers, attempting to pay off their debts with checks drawn on their deposit accounts, would cause bank money contraction and price level deflation. Such deflation, by raising the real burden of debts, would induce further attempts to deleverage, leading to further monetary contraction and further price deflation and so on ad infinitum in a self-reinforcing spiral. Monetary policy would have to reverse the vicious cycle of debt deleveraging and price deflation before it could make inroads into the depression. Fisher thought Roosevelt's policy of reflating prices to their pre-slump level would do the job.

Keynes took a different route, abandoning monetary policy for fiscal policy on the grounds that a "liquidity trap" rendered the former ineffective and the latter effective in depressions. He argued that with interest rates at near-zero levels (as they were in the Great Depression) money becomes a perfect substitute for Treasury bills in asset portfolios. At that point the demand for money becomes infinitely elastic with respect to the interest rate such that all newly central-bank-created money is absorbed into idle hoards rather than into active circulation in the spending stream. The result is to render monetary policy impotent at the zero bound and to leave fiscal policy, with its multiplier effect on income and spending, as the only game in town.

Their policy differences notwithstanding, Fisher and Keynes remained united both in their opposition to "do-nothing" and austerity measures and in their dedication to eliminating the depression through activist intervention. In this connection, Nasar correctly emphasizes that although Keynes is sometimes accused of being a socialist or a socialist sympathizer, in actuality he was anything but. He detested socialism and admired capitalism as the economic system most conducive to individual liberty, personal initiative, and intellectual and artistic creativity. He sought to save capitalism by restoring it to its full-employment potential where those qualities could flourish.

Nasar's book is full of surprises. We learn, for example, (1) that Hayek and philosopher Ludwig Wittgenstein were cousins, (2) that Schumpeter's pioneering *The Theory of Economic Development* was ignored by most economists and critiqued with extreme hostility by others upon its publication, (3) that libertarian Hayek, the darling of American conservatives, in the 1950s "despised Republican politicians, all cars, and practically everything else about life in America, including the absence of universal health insurance and government-sponsored pensions," (4) that Irving Fisher was perhaps the first U.S. employer to make automatic cost

of living adjustments to the wages of his employees, (5) that Marx in *Das Kapital* condemned the squalor of factory workers without ever setting foot in an actual factory, (6) that philosopher Frank Ramsey wrote at age 19 a criticism of Keynes' *Treatise on Probability* "so devastating that Keynes gave up any notion of a mathematical career," and (7) that the Bretton Woods conference was crawling with Soviet spies, including Treasury economist Harry Dexter White, FDR adviser Lauchlin Currie, and the University of Chicago's Oskar Lange. But perhaps Nasar's biggest surprise is the cordial personal and professional relationship she finds existing between Keynes and Hayek, the two main rival macroeconomists in the 1920s and '30s, and bitter foes on the causes of the trade cycle and mass unemployment and of the need for stabilization policy. Although both economists ordinarily were extremely critical of each other's work, it was Keynes who congratulated Hayek on the excellence of his *Road to Serfdom* and who nominated him for membership in the British Academy. And it was Hayek who wrote to Keynes' widow in 1946 that Keynes was "the one great man I ever knew, and for whom I had unbounded admiration."

In sum, Nasar's is a fascinating and accessible work, one that will reward all readers, economists and noneconomists alike. True, the book is not perfect: Rather it is a somewhat awkward amalgam of three smaller books pressed into one. It is an economic history, largely of England and Vienna, of

the period circa 1850-1950. It is a series of scintillating intimate portraits of a too small subset of great economists. And it is a partial catalog of their theories and policy analyses. One wishes Nasar had chosen to expand the third book to include additional great economists and their theories. And one wishes she had given that expanded third book pride of place. But she did not choose to do so.

Nasar wrote the bulk of her book before the appearance of the recent financial crisis and the Great Recession. She opines that these disturbances neither invalidate her thesis of the long-run persistence of shared prosperity under capitalism, nor do they necessitate revision of her book. Maybe so, but this reviewer's preference is that she extend her coverage to include at least some of the economic and policy debates sparked by these recent episodes. Given the need to reassess mainstream macroeconomic thinking in the light of its failure to predict the crisis, these debates seem bound to impact the current and future evolution of economic thought.

**RF**

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**Thomas M. Humphrey is a retired long-time economist with the Richmond Fed's research department and a former editor of the Bank's *Economic Quarterly*. He specializes in the history of monetary thought, and most recently has written on the history of the theory of the lender of last resort.**

## UPFRONT *continued from page 5*

motorists from using local roads to bypass tolls while allowing local drivers to make some short trips for free. But for longer trips, North Carolina's entire I-95 corridor would become a toll road upon completion of phase one in 2019.

Under this scenario, the study estimates that each of the three toll zones in the first phase would charge \$3.84, while each of the six toll zones in the second phase would charge \$1.28. So the owner of a passenger car crossing the entire state would pay \$19.20. North Carolina expects to collect all fees electronically as cars move at full speed through the toll zones using a transponder system that would be compatible with E-ZPass and other toll programs along the I-95 corridor. Owners of cars lacking toll transponders would receive bills in the mail. The study projects that the tolls would raise nearly \$30 billion over 40 years.

Virginia's plan to charge tolls on I-95 is less ambitious and detailed than North Carolina's proposal. But the Old Dominion expects to place tolls on I-95 that would raise \$250 million in the first five years and more than \$50 million per year after that. The tolls would help fund comprehensive improvements outlined in Virginia's "I-95 Corridor Vision Plan." The Virginia Department of Transportation estimates that it would cost \$12.1 billion to fully execute the plan along its 179-mile stretch of I-95, so additional funding would have to come from other sources.

Critics of toll roads claim they discriminate against poor people. But tolls connect the cost of highways to the people who use them, says Brian Taylor, director of the Institute of Transportation Studies at the University of California, Los Angeles. Federal and state fuel taxes made that connection in the early days of driving, but increases in fuel efficiency and reluctance to raise fuel taxes have created huge gaps in highway funding nationwide.

"A great deal of concern has been raised, some of it justified, about the equity of returning to tolls, but critics have been silent about the equity of using sales taxes to fund highways," Taylor says. Raising general sales taxes to pay for highways is "a doubly regressive approach," while tolls tend to raise a greater share of funding from wealthier motorists. Taylor argues that sales taxes are inherently regressive, and when their proceeds are used to fund highways, they become doubly regressive because wealthy people tend to use highways more than poor people.

Taylor attributes much of the recent interest in tolls to advances in technology. "We have eliminated the need for the traditional toll booth," he says. "Tolling is much more practical now." And the North Carolina and Virginia proposals should be more palatable to local drivers on I-95, he adds, because many out-of-state motorists travel this Maine-to-Florida throughway.

— KARL RHODES

## Death and Taxes

BY CHARLES GERENA

**“Aging and Strategic Learning: The Impact of Spousal Incentives on Financial Literacy.”** Joanne W. Hsu, Federal Reserve Board of Governors Finance and Economics Discussion Series Working Paper 2011-53, October 2011.

Women tend to live longer than men. When a woman’s husband dies, she faces the prospect of dealing with the household’s finances alone. In households where the wife was already primarily responsible for financial matters, she is accustomed to this responsibility. In other households, it requires the wife to adjust to a new role under difficult circumstances.

Joanne Hsu, an economist at the Federal Reserve Board of Governors, created a model to examine a married woman’s incentives to increase her financial literacy, including her likelihood of widowhood in the future.

“In sum, the model predicts that a woman will acquire financial knowledge very slowly at the beginning of the marriage and delay larger investments in human capital,” Hsu explains. “The rate of investing will increase as the expected time of widowhood approaches. After her husband dies, she takes charge of the finances and accrues payoffs to her financial knowledge.”

Using data from a national survey of households and other sources, Hsu ran the model and found that wives did increase their financial literacy in various ways as their husbands aged. As the time to potential widowhood grew nearer, women accelerated their literacy efforts, though the expected length of widowhood was not a statistically significant incentive.

**“Do Borrower Rights Improve Borrower Outcomes? Evidence From the Foreclosure Process.”** Kristopher Gerardi, Lauren Lambie-Hanson, and Paul S. Willen, Federal Reserve Bank of Boston Public Policy Discussion Paper 11-9, December 2011 (also published as Federal Reserve Bank of Atlanta Working Paper 2011-16, November 2011).

It’s commonly believed that the best way to stem the tide of foreclosures is to strengthen protections for homeowners in default. Kristopher Gerardi at the Atlanta Fed, and Lauren Lambie-Hanson and Paul Willen at the Boston Fed decided to test this intuition by evaluating two types of borrower protections. In both cases, foreclosures were delayed but not prevented.

When someone defaults on a mortgage, the lender usually has two choices — petition a court to foreclose on the house and auction the property, or carry out the foreclosure process itself if the borrower agreed to give the lender that right, known as the “power of sale.” In 20 states, only

judicial foreclosures are permitted. Gerardi, Lambie-Hanson, and Willen found that the foreclosure process was much longer in these states.

“A year after a borrower enters serious default, which we define as becoming 90 days delinquent, lenders had auctioned off only 14 percent of properties in judicial states compared to 35 percent in power-of-sale states,” noted the paper’s authors.

This delay might seem like a good outcome because it gives borrowers time to fix things. In fact, borrowers in states with judicial foreclosures were no more likely to become current on the mortgage or pay it off. They stayed in their houses longer, but the unhappy ending still happened.

Gerardi, Lambie-Hanson, and Willen also examined a Massachusetts law passed in November 2007 that suspends foreclosure proceedings for 90 days. They compared mortgage outcomes in Massachusetts before and after the law’s implementation with outcomes in three neighboring states with no major changes in their foreclosure regulations. Here, too, the borrower protection resulted in no significant change in modification rates.

The authors surmise that the 90-day waiting period wasn’t enough time for borrowers in default to solve their problems. Massachusetts lawmakers may have come to the same conclusion — they extended the waiting period to 150 days in August 2010. There is insufficient evidence to evaluate the results of that change.

**“How the U.S. Tax System Stacks Up Against Other G-7 Economies.”** Anthony Landry, Federal Reserve Bank of Dallas Economic Letter, vol. 6, no. 12, November 2011.

Anthony Landry, a senior research economist at the Dallas Fed, combed through aggregate data from the Organization for Economic Cooperation and Development to see how U.S. tax policy compares with that of the other Group of Seven industrialized nations: Canada, France, Germany, Italy, Japan, and the United Kingdom.

As in other G-7 countries, income taxes account for the bulk of the government’s revenue, mostly levies on workers’ paychecks rather than taxes on capital or corporate income. Value-added and excise taxes on goods and services account for a smaller percentage of revenue here, partly due to the fact that the United States has the lowest consumption sales tax rate among the G-7 nations.

Together with the lowest labor income taxes among the G-7, this arguably puts the United States in a competitive position globally to attract skilled workers. On the other hand, the United States had the second-highest corporate tax rate among G-7 countries (second only to Japan). **RF**

**An Uncertain Path**

The degree to which fiscal consolidation will occur depends, like much of the EU's historical development, almost entirely on political will. Countries whose governments would provide stability to a centralized tax and spending system, such as Germany, have little incentive to sign on if indebted nations refuse longer-term fiscal reform within their own borders. The new fiscal compact notwithstanding, that has been difficult to achieve to everybody's satisfaction. Economists and European leaders are far from agreed on which parties should make the greater concessions. Public opinion may be another impediment. Europeans mainly identify with their home countries rather than Europe. "It matters because where you have your self-identity to a large extent indicates in the name of what you're willing to be taxed," Kirkegaard says.

The underlying problem of the eurozone's structure remains: The euro conjoins fundamentally different economies. "Countries like Greece and Portugal have a seri-

ous competitiveness problem," says Rose at UC Berkeley. They are unable to produce as cheaply as the European core, and unable to compensate to boost their growth and exports by devaluing their currencies. That leaves only two options: adjustment through higher unemployment and lower real wages, which several countries are currently experiencing — nearly a quarter of Spaniards are unemployed, the highest rate in the eurozone — or structural reform in labor and product markets to cheapen production, which is not an overnight process. Until structural reform happens, their lack of competitiveness leads to persistent capital outflows, stagnating real wages, and worsening fiscal positions — "exactly what you'd imagine coming out of the optimum currency criteria" when not followed, Rose says.

"That's one of the main reasons that the problems have proven so time consuming to solve for the euro area," Kirkegaard says. "Politically, it's not just about writing a big check and bailing out Greece. It's about correcting some of these design mistakes." **RF**

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### The Great Recession and State Unemployment Insurance Funds

BY RICK KAGLIC

**R**oughly 8.8 million nonfarm payroll jobs were lost nationwide during the labor market downturn of the Great Recession, and fewer than 3.5 million have been generated since the recovery got under way in mid-2009. The official unemployment rate in the United States has come down a bit from recession highs, yet remains well above the peaks established following the recessions in 1991 and 2001. Perhaps the most striking statistic in labor market data, however, is that the percentage of officially unemployed workers who have been out of work for 27 weeks or more has been stuck in a range between 40 percent and 45 percent (see chart below). This is sharply higher than the previous peak established during the deep double-dip recessions of the early 1980s, when the share of long-term unemployed hit roughly 26 percent.

The persistence of long-term unemployment increased the average length of time that workers were collecting benefits and stressed states' regular unemployment reserves, in many cases exhausting them entirely. Yet even if a state's fund becomes insolvent, it is still statutorily obligated to continue paying benefits to qualifying unemployed workers. To do so, many states had to borrow money from the federal government simply to meet their regular benefits obligations. (This article sets aside the issue of extended benefits since most were paid for by the federal government during much of the period being discussed here.)

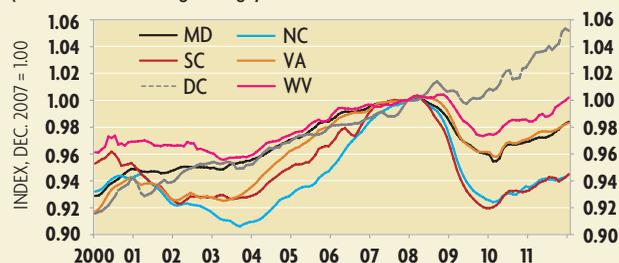
The recent downturn has had major effects on the unemployment insurance programs in Fifth District states, especially those hardest hit, and has required states to take various measures to meet their unemployment insurance promises. Those measures, in turn, are likely to have effects on businesses, workers, states' budgets, and possibly even the program itself.

#### The Unemployment Experience in the Fifth District

The unemployment insurance program is a joint federal-state initiative that began back in 1935 to ease the burdens on workers following the Great Depression. When workers become unemployed due to circumstances beyond their control, they may become eligible to receive unemployment insurance benefits. The state pays these claims from an unemployment insurance trust fund derived from taxes on employers. Benefit levels, as well as the tax rates and the portion of wages that are taxable, vary considerably across states. The revenues from the state's unemployment insurance taxes are held by the federal government in individual accounts for each state.

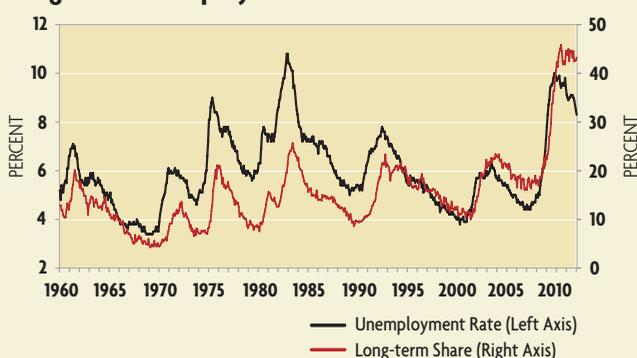
#### Payroll Employment

(Three-month moving average)



SOURCE: U.S. Department of Labor, BLS

#### Long-Term Unemployment in the U.S.



SOURCE: U.S. Department of Labor, BLS

The adjustments that Fifth District states have had to make, or will have to make, to their programs as a result of the downturn depend primarily on two factors: the depth and longevity of the state's labor market contraction and how well positioned its trust fund was heading into the downturn. With regard to the first factor, the Fifth District on average lost fewer jobs than the nation as a whole, but there was considerable variation across the region. States with stronger ties to the federal government and military (Maryland and Virginia) and the District of Columbia fared better than those tied to manufacturing and construction industries (North Carolina and South Carolina). In the Carolinas, the recession resulted in combined job losses amounting to nearly 500,000 from peak to trough, or 8.1 percent of total payrolls. (The 8.8 million lost nationwide represent 6.3 percent of the national total.) In the rest of the District, job losses totaled 4.5 percent (see chart).

Beyond the magnitude of the job contraction in the District, this cycle is notable for its prolonged and

disappointing recovery. Employment growth during the most recent expansion pales in comparison to recoveries from prior deep recessions, contributing to longer spells of unemployment. Outside of the District of Columbia, where the recession was comparatively short, employment in each of the states remains below prerecession levels, with the states having varying degrees of success recapturing the jobs that were lost. On the far ends of the spectrum, West Virginia's economy has regenerated more than 95 percent of its lost jobs, while North Carolina has regained less than a third. This jobs gap has left unemployment, and unemployment benefits payments, elevated in much of the Fifth District.

The second factor, how well positioned the state's unemployment trust fund was to weather the sudden surge in unemployment insurance claims, was more within the control of policymakers. State governments have to perform a careful balancing act with their unemployment insurance funds. On the one hand, policymakers want to have enough in reserves to meet their obligations and mitigate the shock of rising unemployment to the economy during a recession. On the other hand, they want to minimize the tax costs associated with hiring a new worker so as not to stifle labor demand during expansions.

One measure that can be used to gauge a state's preparedness is its Average High Cost (AHC) multiple. A useful way to think about the AHC multiple is the length of time, measured in years, that it would take for the state's trust fund to run out of reserves if a significant recession were to occur. For the calculation of the AHC multiple, "significant" is the average of the three highest insurance payout years in the last 20 years. A multiple of 1.00 suggests that the state would have enough money in its trust fund to pay those benefits for one year if a severe recession were to hit. While there is no federal statutory definition of "adequately funded," the U.S. Department of Labor suggests that states should have a multiple of at least 1.00 heading into a recession to be considered minimally solvent.

So how adequately funded were the Fifth District's unemployment trust funds heading into the downturn? Here again, there is quite a bit of variation across the region. Prerecession multiples ranged from a high of 1.11 in the District of Columbia to lows of 0.23 and 0.26 in North Carolina and South Carolina, respectively (see table). Based on the multiples, it appears that the District of Columbia had the only trust fund that was "minimally solvent" according to the Labor Department standard. While Maryland, Virginia, and West Virginia were not adequately prepared to deal with a significant recession, North Carolina and South Carolina appeared even less so.

Of course, prepared is a relative concept. No state was

### Preparedness and Generosity (as of 2007 Q4)

	Average High Cost Multiple	AWBA as a % of AWW*
DC	1.11	22.4
MD	0.78	33.0
NC	0.23	38.7
SC	0.26	35.7
VA	0.70	33.1
WV	0.45	39.2

NOTE: \*AWBA denotes Average Weekly Benefit Amount, AWW denotes Average Weekly Wages.  
SOURCES: U.S. Department of Labor, ETA, OWS, Division of Fiscal and Actuarial Services

positioned well to deal with the severity of the Great Recession. The years used to calculate states' AHC multiples generally fell in the era known as the "Great Moderation," a period characterized by relatively prolonged economic expansions and two short and very shallow recessions in 1991 and 2001. Thus, the last two deep recessions, those in the mid-1970s and early 1980s, were not used to calculate the multiples.

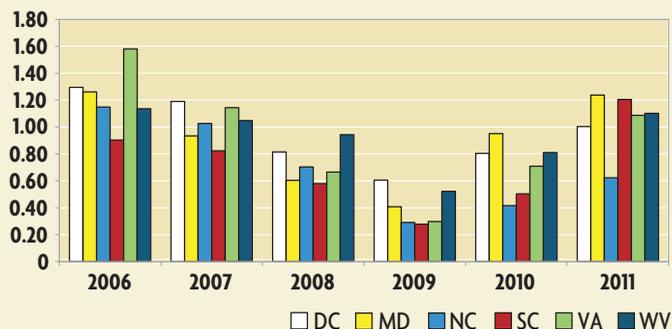
An additional factor influencing the current health of states' trust funds is how generous their unemployment insurance benefits were. In more normal

economic times, states often sought to maximize the benefits paid to furloughed workers to help them through short stretches of unemployment. These benefits help workers to provide for their families during the unemployment spell, while at the same time helping to stabilize overall economic activity by minimizing the shock to aggregate demand. States have a lot of flexibility in determining the level of benefit payments to individuals. Most use a formula that pays half the worker's wage up to a certain maximum, which may be adjusted for the number of dependents and other factors. To get a sense of relative generosity in each state, the actual average weekly benefit amount (AWBA) as a percent of the average weekly wage (AWW) can be used as a rudimentary proxy. A higher number suggests a relatively more generous benefits program. Based on this criterion, the programs in West Virginia, North Carolina, and South Carolina were relatively more generous at the start of the recession than that of the District of Columbia.

### Pressure on the Trust Funds

To show how pressures began to materialize when the recession started, we can look at inflows and outflows for each state's unemployment trust fund. The chart below shows the ratio of revenues collected to benefits paid by jurisdiction for the period 2006 to 2011. The revenues component refers only to those payroll taxes collected from employers for the purpose of funding the state's unemployment insurance

### Ratio of Revenue Collected to Benefits Paid



SOURCES: U.S. Department of Labor, ETA, OWS, Division of Fiscal and Actuarial Services

program. A ratio greater than 1.0 indicates that the state was collecting more in state unemployment taxes than it was paying out in unemployment insurance benefits; less than 1.0 means the state was paying out more than it was taking in.

At the beginning of the period, prior to the recession, inflows were exceeding outflows in each state but South Carolina, and trust fund balances were rising. In 2007, however, initial unemployment claims increased from the prior year in four of the District's six jurisdictions, and benefits payments increased in five. (Virginia was the lone exception.) With that, the revenue-to-benefits-payments ratios began to fall. Still, only two states, Maryland and South Carolina, experienced trust fund deficits for the year.

It was not until 2008, as the Great Recession got under way in earnest and job losses mounted quickly, that benefits payments exceeded revenues by significant margins in most jurisdictions. The pressure came from both directions: Not only did unemployment claims increase dramatically, but also the pool of taxable employees dwindled. As a result, District-wide benefits payments jumped 41 percent in 2008 while revenue collections dipped 5 percent. Conditions worsened considerably in 2009: Benefits payments in the District doubled from 2008 while revenues continued to fall. Revenue-to-benefits ratios plunged everywhere.

The shortfalls in 2009 were particularly severe in the Carolinas and Virginia, where the states were collecting roughly 35 cents in revenue for each dollar that was being paid out in benefits. The Carolinas had a twofold problem: Far more jobs were lost during the downturn and benefits were relatively more generous. In addition to the increase in benefits payments, these two states experienced the biggest declines in revenue collections of District states. Virginia's problems, in contrast, were mostly on the benefits side; benefits payments increased dramatically while collections declined only slightly. The District of Columbia, Maryland, and West Virginia experienced their own difficulties, but to a lesser extent.

Despite rapidly falling trust fund balances, states were still statutorily bound to continue paying benefits to qualified unemployed workers, even if that balance fell to zero. If the state can no longer go to its trust fund to meet its obligations (if it reaches insolvency), the state then has to borrow money from the federal government to continue making those payments. During the course of this downturn, and the continued strains on labor markets in its wake, four states — Maryland, North Carolina, South Carolina, and Virginia — were forced to borrow money from the federal government. South Carolina's fund was the first to reach insolvency in late 2008, but the others were not far behind.

Unfortunately, those strains have continued. As of Sept. 31, 2011, three of the four had

outstanding balances with the federal government. North Carolina had the largest balance at roughly \$2.5 billion (which ranked as the nation's fifth highest). South Carolina had a balance of more than \$850 million and Virginia owed about \$211 million. Maryland had borrowed roughly \$90 million in early 2010 to meet its obligations but was able to pay the balance off by year-end.

Thus, while the District of Columbia, Maryland, and West Virginia have put their respective trust funds on more solid footing, North Carolina, South Carolina, and Virginia remained indebted to the federal government at the end of 2011. In addition to paying interest on that debt, employers in these states have seen their effective Federal Unemployment Tax Act (FUTA) taxes increase by 0.3 percent as a penalty for the state having continuous unpaid loan balances for more than two years. That penalty will rise until the state's debt is paid off.

### Closing the Gap

So what is a state to do in order to restore health to its trust fund in times of continued stress? On the expenditure side, states have few practical options. They can cut weekly benefits payments, reduce the maximum duration for which those payments are made, or carry out some combination of the two. None of the above is a politically appealing option, however, especially during a downturn when they all fly in the face of the spirit of the program. The hurdles to reducing benefit levels and duration are even greater because of the severity of the most recent recession. (As part of the American Recovery and Reinvestment Act, the federal government temporarily provided 100 percent of the funding for states' extended benefits programs, plans usually funded 50 percent by the state, but the law prohibited states that accepted the funding from reducing benefit levels unless existing state law allowed for it.)

At the time of the recession, the vast majority of states (including all of those in the Fifth District) had a maximum benefit period of 26 weeks written into state law. As is the case with reducing benefit levels, cutting the number of weeks of eligibility is an unappealing option during times of high and sustained unemployment. Nationally, few states have done so. In the Fifth District, only South Carolina has opted to take this step. In mid-2011, the state's legislature voted to reduce the maximum to 20 weeks from 26 weeks.

As a practical matter, with little political appetite to slash benefits when needs are perceived to be the greatest, much of the adjusting is left to be done on the revenue collection side. States often make adjustments to the unemployment taxes they impose on employers based on the relative health of their trust funds. Some are triggered automatically when the trust fund attains a certain level of duress (as was the case in

#### QUICK FACT

If a state can no longer go to its trust fund to pay unemployment benefits — if the trust fund runs out of money — the state has to borrow money from the federal government to cover the cost of paying the benefits. North Carolina, South Carolina, and Virginia remained indebted to the federal government at the end of 2011.

Maryland, Virginia, and West Virginia), while others require further legislative intervention (as in North Carolina and South Carolina).

The two variables through which a state can easily affect the revenue stream are the tax rate and the taxable wage base. States have a range of unemployment tax rates that are assessed to employers based on their past experience with the unemployment insurance fund (more claims against the fund equal higher tax rates), as well as a separate rate for new employers. The average tax rates have increased in each Fifth District jurisdiction since 2007 (see chart).

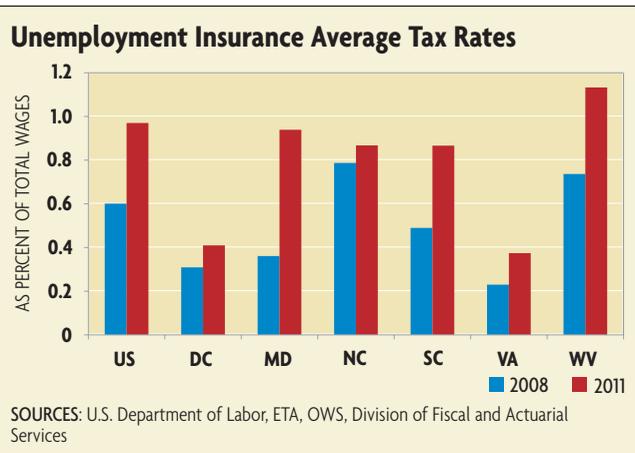
States also have the option to increase the taxable wage base. Because the federal unemployment tax applies to the first \$7,000 of a covered employee's wages, all states have a minimum tax base of at least \$7,000. Individual states are free to set the base as they see fit, however. In the Fifth District, taxable wage bases range from a low of \$8,000 in Virginia to a high of \$19,700 in North Carolina. Since 2009, three states — North Carolina, South Carolina, and West Virginia — have raised the taxable wage base to help shore up their trust funds. Of those, North Carolina's increase was the smallest, as its base increased by just \$400.

Unsurprisingly, the result of the changes in rates and bases has been higher taxes on employers. The average tax rate expressed as a percent of total wages, which reflects changes in both the tax rates and the taxable base, has increased in all Fifth District states since the trust funds came under severe pressure. The most significant increase has taken place in Maryland, where the average tax rate more than doubled from 0.36 percent in 2008 to 0.94 percent in 2011. The least significant increase took place in North Carolina, where the average tax rate edged up from 0.79 percent to 0.87 percent. It is perhaps surprising that North Carolina's adjustments on both the tax rate and tax base are comparatively lower, considering that its trust fund woes are the most challenging of District states.

### Conclusion

As in most of the rest of the nation, unemployment insurance funds in Fifth District states came under extreme pressure during the Great Recession. In its aftermath, states have taken a variety of steps to continue paying unemployment insurance claims and to replenish reserves in their trust funds. With significant political constraints to cutting benefits, states mostly accomplished this by raising taxes on employers.

Virginia has triggers written into state law that automatically adjust tax rates when its unemployment trust fund reaches certain thresholds (up when needed, down when possible). In contrast, rates in North Carolina and South



Carolina adjust only on legislative initiative. While legislators in the Carolinas ultimately raised tax rates, it appears the automatic triggers in Virginia's law helped the state stabilize its revenues sooner and in a more orderly fashion. And Virginia expects that those tax increases, along with some revenue transfers and the increase in Federal Unemployment Tax Act (FUTA) tax dollars, will enable it to pay off its unemployment insurance debt by 2012. That would allow the commonwealth to avoid further interest payments and would reduce the FUTA taxes that employers pay.

South Carolina's tax increases and stronger job growth are expected to allow the state to pay off its debt by 2015. In contrast, North Carolina's trust fund remains out of balance and the state's job growth lags other District states. Moreover, its path forward is unclear. Without more decisive policy actions, North Carolina's trust fund problems will persist for the foreseeable future. This means that employers in the state will be facing higher unemployment insurance taxes, and considerable uncertainty surrounding them, at a time when labor demand is already weak.

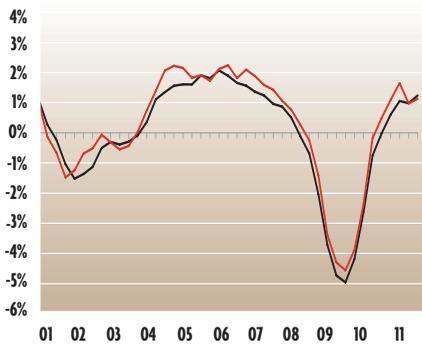
Critics of the unemployment insurance program have argued that unemployment insurance benefits are contributing to persistently high unemployment rates by reducing the cost of being unemployed. Meanwhile, proponents argue that unemployment insurance also provides workers with some latitude to find "the right job," one that makes the best use of their skill sets. As policymakers (federal and state) rethink their programs in the wake of the Great Recession, they are well advised to do so with an eye toward doing more than simply resolving trust fund imbalances. In the end, a well-rounded program that ties unemployment insurance benefits to efficient skills training and job matching programs may help ease labor market friction and speed the healing process. **RF**

## State Data, Q3:11

	DC	MD	NC	SC	VA	WV
<b>Nonfarm Employment (000s)</b>	<b>727.5</b>	<b>2,550.0</b>	<b>3,922.3</b>	<b>1,836.6</b>	<b>3,681.8</b>	<b>756.2</b>
Q/Q Percent Change	0.3	0.5	-0.1	0.2	0.1	0.7
Y/Y Percent Change	2.4	1.0	1.2	1.0	1.0	1.0
<b>Manufacturing Employment (000s)</b>	<b>1.1</b>	<b>113.6</b>	<b>434.9</b>	<b>218.3</b>	<b>229.2</b>	<b>49.6</b>
Q/Q Percent Change	3.2	0.2	0.1	1.5	-0.7	0.3
Y/Y Percent Change	0.0	-0.4	0.4	5.3	-0.2	0.5
<b>Professional/Business Services Employment (000s)</b>	<b>149.7</b>	<b>397.0</b>	<b>512.5</b>	<b>229.6</b>	<b>660.1</b>	<b>62.7</b>
Q/Q Percent Change	0.5	0.6	0.0	-0.3	-0.7	1.1
Y/Y Percent Change	1.3	2.2	4.8	4.1	0.9	3.0
<b>Government Employment (000s)</b>	<b>244.3</b>	<b>508.6</b>	<b>695.6</b>	<b>342.3</b>	<b>707.9</b>	<b>152.6</b>
Q/Q Percent Change	-1.9	0.6	-0.1	0.7	-0.4	1.8
Y/Y Percent Change	-0.1	1.1	-0.5	-1.8	0.7	0.1
<b>Civilian Labor Force (000s)</b>	<b>342.5</b>	<b>3,070.3</b>	<b>4,655.4</b>	<b>2,159.1</b>	<b>4,310.5</b>	<b>798.9</b>
Q/Q Percent Change	-0.3	0.1	0.1	0.1	0.5	0.1
Y/Y Percent Change	-0.5	0.2	1.0	0.3	1.3	-0.2
<b>Unemployment Rate (%)</b>	<b>10.5</b>	<b>7.2</b>	<b>10.7</b>	<b>10.4</b>	<b>6.4</b>	<b>8.1</b>
Q2:11	10.2	7.1	10.5	10.4	6.2	7.9
Q3:10	10.1	7.8	10.7	10.9	6.8	8.5
<b>Real Personal Income (\$Mil)</b>	<b>39,720.4</b>	<b>261,512.9</b>	<b>306,567.3</b>	<b>138,230.8</b>	<b>326,347.0</b>	<b>54,615.8</b>
Q/Q Percent Change	0.3	0.5	0.1	-0.2	0.3	0.0
Y/Y Percent Change	2.5	1.8	1.4	1.4	1.4	1.3
<b>Building Permits</b>	<b>889</b>	<b>3,228</b>	<b>7,844</b>	<b>3,638</b>	<b>6,163</b>	<b>517</b>
Q/Q Percent Change	24.0	15.2	-9.6	-12.0	12.9	12.4
Y/Y Percent Change	278.3	3.3	-7.6	7.9	1.4	22.2
<b>House Price Index (1980=100)</b>	<b>573.8</b>	<b>416.3</b>	<b>308.2</b>	<b>309.8</b>	<b>400.7</b>	<b>216.8</b>
Q/Q Percent Change	0.3	1.8	0.6	0.8	1.1	2.3
Y/Y Percent Change	1.0	-4.0	-3.7	-4.4	-2.7	-1.4
<b>Sales of Existing Housing Units (000s)</b>	<b>8.4</b>	<b>70.4</b>	<b>129.2</b>	<b>69.6</b>	<b>106.0</b>	<b>27.2</b>
Q/Q Percent Change	-8.7	-7.4	-4.7	-0.6	1.9	7.9
Y/Y Percent Change	5.0	10.0	18.3	19.2	3.5	9.7

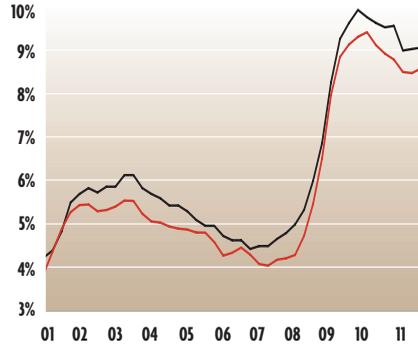
### Nonfarm Employment

Change From Prior Year  
First Quarter 2001 - Third Quarter 2011



### Unemployment Rate

First Quarter 2001 - Third Quarter 2011



### Real Personal Income

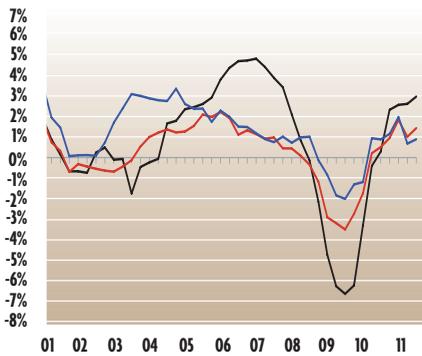
Change From Prior Year  
First Quarter 2001 - Third Quarter 2011



— Fifth District — United States

### Nonfarm Employment Metropolitan Areas

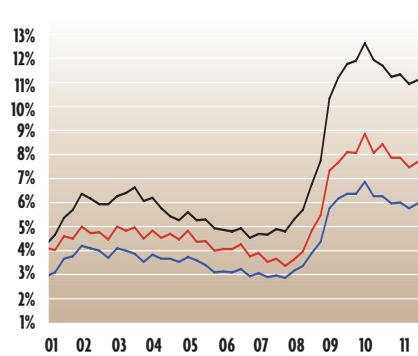
Change From Prior Year  
First Quarter 2001 - Third Quarter 2011



— Charlotte — Baltimore — Washington

### Unemployment Rate Metropolitan Areas

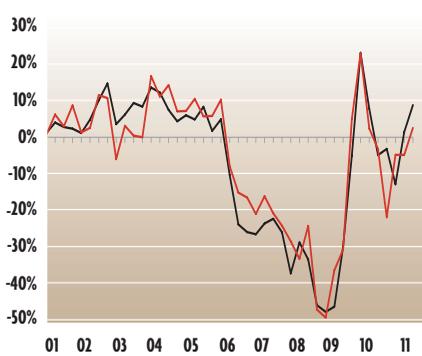
Change From Prior Year  
First Quarter 2001 - Third Quarter 2011



— Charlotte — Baltimore — Washington

### Building Permits

Change From Prior Year  
First Quarter 2001 - Third Quarter 2011



— Fifth District — United States

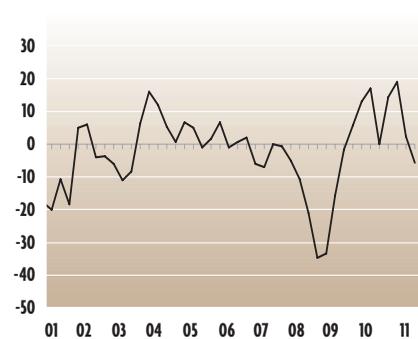
### FRB—Richmond Services Revenues Index

First Quarter 2001 - Third Quarter 2011



### FRB—Richmond Manufacturing Composite Index

First Quarter 2001 - Third Quarter 2011



### House Prices

Change From Prior Year  
First Quarter 2001 - Third Quarter 2011



— Fifth District — United States

**NOTES:**

- 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.
- 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, Q3:11

	Washington, DC	Baltimore, MD	Hagerstown-Martinsburg, MD-WV
<b>Nonfarm Employment (000s)</b>	<b>2,433.2</b>	<b>1,295.0</b>	<b>97.6</b>
Q/Q Percent Change	-0.1	-0.3	-1.6
Y/Y Percent Change	0.9	1.4	0.0
<b>Unemployment Rate (%)</b>	<b>6.0</b>	<b>7.6</b>	<b>9.3</b>
Q2:11	5.7	7.4	9.3
Q3:10	6.1	7.8	10.1
<b>Building Permits</b>	<b>4,827</b>	<b>1,285</b>	<b>156</b>
Q/Q Percent Change	11.0	42.0	10.6
Y/Y Percent Change	43.4	-1.7	5.4
	Asheville, NC	Charlotte, NC	Durham, NC
<b>Nonfarm Employment ( 000s)</b>	<b>168.3</b>	<b>825.2</b>	<b>272.0</b>
Q/Q Percent Change	-1.0	-0.6	-0.7
Y/Y Percent Change	0.7	3.0	0.2
<b>Unemployment Rate (%)</b>	<b>8.3</b>	<b>11.1</b>	<b>7.8</b>
Q2:11	7.8	10.5	7.2
Q3:10	8.4	11.4	7.5
<b>Building Permits</b>	<b>349</b>	<b>1,868</b>	<b>527</b>
Q/Q Percent Change	22.5	19.1	-3.5
Y/Y Percent Change	-36.8	51.3	-16.1
	Greensboro-High Point, NC	Raleigh, NC	Wilmington, NC
<b>Nonfarm Employment (000s)</b>	<b>339.0</b>	<b>508.5</b>	<b>137.9</b>
Q/Q Percent Change	-1.3	-0.1	-1.0
Y/Y Percent Change	0.0	1.6	0.1
<b>Unemployment Rate (%)</b>	<b>10.7</b>	<b>8.5</b>	<b>10.7</b>
Q2:11	10.1	7.8	9.7
Q3:10	10.8	8.4	10.0
<b>Building Permits</b>	<b>451</b>	<b>1,419</b>	<b>515</b>
Q/Q Percent Change	9.5	-33.4	13.9
Y/Y Percent Change	-15.9	8.7	26.5

	Winston-Salem, NC	Charleston, SC	Columbia, SC
<b>Nonfarm Employment (000s)</b>	<b>205.7</b>	<b>295.7</b>	<b>344.0</b>
Q/Q Percent Change	0.5	-0.5	-0.8
Y/Y Percent Change	1.7	2.8	0.4
<b>Unemployment Rate (%)</b>	<b>9.7</b>	<b>9.3</b>	<b>9.6</b>
Q2:11	9.3	8.6	8.7
Q3:10	9.9	9.2	9.2
<b>Building Permits</b>	<b>345</b>	<b>773</b>	<b>715</b>
Q/Q Percent Change	2.4	-25.0	-8.3
Y/Y Percent Change	11.7	16.9	-8.6
	Greenville, SC	Richmond, VA	Roanoke, VA
<b>Nonfarm Employment (000s)</b>	<b>304.3</b>	<b>609.4</b>	<b>155.9</b>
Q/Q Percent Change	0.1	-0.7	-0.5
Y/Y Percent Change	2.6	1.2	0.9
<b>Unemployment Rate (%)</b>	<b>9.3</b>	<b>7.0</b>	<b>6.4</b>
Q2:11	8.5	6.8	6.4
Q3:10	9.5	7.6	7.2
<b>Building Permits</b>	<b>413</b>	<b>864</b>	<b>98</b>
Q/Q Percent Change	-16.4	12.9	-3.0
Y/Y Percent Change	29.9	-16.4	-13.3
	Virginia Beach-Norfolk, VA	Charleston, WV	Huntington, WV
<b>Nonfarm Employment (000s)</b>	<b>742.3</b>	<b>148.6</b>	<b>112.3</b>
Q/Q Percent Change	-0.2	0.5	-1.2
Y/Y Percent Change	0.3	-0.1	-0.4
<b>Unemployment Rate (%)</b>	<b>7.0</b>	<b>7.3</b>	<b>8.3</b>
Q2:11	6.8	7.9	8.5
Q3:10	7.3	8.4	8.9
<b>Building Permits</b>	<b>1,409</b>	<b>43</b>	<b>21</b>
Q/Q Percent Change	19.9	38.7	-27.6
Y/Y Percent Change	31.9	4.9	133.3

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## Reflections on Sarbanes-Oxley 10 Years Later

BY JOHN A. WEINBERG

In response to the 2007-2008 financial crisis, U.S. lawmakers passed the Dodd-Frank Act (DFA), the most sweeping financial reform package in decades. Prior to the DFA, the legislation holding that title was Sarbanes-Oxley, the 2002 regulatory response to fraudulent accounting practices by several of the nation's largest companies. SOX, as it became known, heightened disclosure and auditing requirements for all publicly traded firms to enhance transparency for investors. Ten years after its passage, some reflections on its impact may be relevant as regulators continue to implement the DFA.

The expectations placed on SOX — which passed Congress with near unanimity — were extraordinary. One is that it should have prevented events like the recent financial crisis. Some of the firms that engaged in excessive risk-taking and ultimately received government support were not transparent about their true financial conditions. But the pervasive expectation of government support for systemically important firms and markets was arguably a larger catalyst for risk-taking than the more isolated instances of financial misrepresentation that occurred.

Another claim often made around the time of SOX's passage was that it would impose hugely burdensome compliance costs on firms, especially smaller firms with modestly staffed compliance departments. Data on direct compliance costs are sparse, but it is not obvious that they have been as large as predicted. John Coates of Harvard Law School suggested just five years after SOX that compliance costs were on the order of \$1 million for every \$1 billion of revenue, or about 0.1 percent of revenues, and that costs appeared to fall with firm size and over time with learning. This is evidence that U.S. firms are quite adaptable at navigating — and perhaps eventually bypassing — new regulations. Perhaps that adaptability and innovation may have been better spent on other, potentially more productive endeavors, but the quantitative impact of such diversion of effort is hard to gauge.

One way to assess whether the costs of a regulation are “too large” is to look at how the regulation changes behavior. Since SOX applies only to public companies, the burden of compliance costs could be manifested through a decline in initial public offerings (IPOs). There has been a clear decline in IPOs in the United States, from averages of 311 annually from 1980 through 2000 to 102 per year from 2001 through 2009, according to University of Florida economist Jay Ritter. The decline in IPOs is most prevalent for small firms (those with less than \$50 million in sales), which is what one might expect if oppressive compliance costs were a primary catalyst. But there are possible explanations other than SOX. For example, Ritter and co-authors of a recent

study argue that decreasing profitability of small firms, rather than compliance costs, has made it increasingly desirable for those firms to be sold to larger firms rather than to go public.

There is, however, some evidence that an increasing number of firms have gone from public to private due to SOX. Companies that go private often cite SOX as the reason, and the number of private equity deals has grown since SOX. Relatively small American firms were more likely than their European counterparts to sell to private buyers immediately following SOX, though not thereafter, suggesting rapid adjustment to the legislation. Still, this may not always be a bad thing. Going private might indicate that SOX is working by restricting riskier firms to more sophisticated investor pools. Coates suggests that the increasing use of private equity could be due to some firms exiting or avoiding the public market rather than suffering a loss in share value following increased disclosures. On the other hand, if firms that go private accept funding on less advantageous terms than they could have obtained publicly, that could make them riskier, a potential social cost of SOX.

In an ideal world, researchers could gain more clarity on the effects of new regulations by studying the counterfactual — for example, what the world would have looked like without SOX. That world would almost certainly have involved more public scrutiny as a natural byproduct of the accounting scandals. SOX may have prevented some extreme cases of fraud, but had a few firms committed such malfeasance — which no doubt would have been made more difficult by enhanced attention from investors — those actions might still have imposed fewer costs on the economy than those created by SOX.

Today there are very large expectations surrounding the DFA's ability to solve perceived problems in financial markets. At the time of its passage, SOX was thought to be an inscrutable piece of legislation, both in terms of its length and the degree to which regulators had to interpret the written statute to implement Congress' intent. Yet SOX is orders of magnitude shorter than the DFA, and the expectations placed on the DFA for preventing the next would-be crisis appear even greater. One lesson from SOX is that the indirect and even direct effects of large-scale regulations are not always obvious or expected. Ten years from now, economists will almost certainly be talking about the difficulty of interpreting the true impact of many aspects of the DFA, as they are — and may still be — with SOX. **RF**

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

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## Cover Story

Labor force participation in the United States is at the lowest rate in decades. While much of the decline is due to demographic changes, many people have dropped out because they're discouraged about the job market. What does the decline in labor force participation mean for the U.S. economy — and can it be reversed?

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## Hope for Honduras?

This relatively poor Central American country plans to develop a largely autonomous city on 1,000 square kilometers of uninhabited land. Economist Paul Romer is pushing the idea that “charter cities” can ignite economic growth by offering better rules and governance. With Romer’s help, Honduras is trying to test that theory.

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## Shale Gas Development

Deposits of natural gas locked in shale may promise comparatively cheap and plentiful domestic supplies of energy. But tensions have flared over the environmental costs of “fracking,” a process used to extract the gas.

## Federal Reserve

The Fed affects households primarily through interest rates, inflation, and unemployment — but there’s no reason to believe it affects everyone equally. Extremely low interest rates have helped lower household interest income by \$400 billion since 2008, while inflationary periods benefit borrowers at the expense of lenders. Should the Fed worry about these redistributive effects when it steers the macroeconomy?

## Economic History

North Carolina trucker Malcom McLean sparked global trade in 1956 when he shipped his first container load from Newark, N.J., to Houston. He had a plan: Boxes could travel, unopened during transit, and be transferred by crane among ships, trucks, and railcars. This slashed shipping costs, which made it possible to ship goods over long distances cheaply, leading to today’s era of global trade.

## Interview

John List of the University of Chicago on the use of field experiments in economics

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