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THE FEDERAL RESERVE BANK OF RICHMOND



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What Should Policymakers Do About Executive Pay?

Many economists and policymakers attribute the 2007-2008 financial crisis, in part, to compensation arrangements that motivated executives and other employees of financial institutions to take excessive risks — risks in pursuit of bigger bonuses and higher values for their stock and stock options. As noted elsewhere in this issue of *Region Focus* (“Checking the Paychecks,” p. 8), this view led Congress to enact a number of provisions in the 2010 Dodd-Frank Act to curb incentive pay. Even before the crisis, there were calls for regulators to do something about executive compensation, which was believed to be driven upward by the influence of management over compliant boards and by a corresponding lack of empowerment on the part of shareholders. What does economics tell us about when federal law should step in to try to shape compensation at private companies?

There is reason to be cautious about the efficacy or necessity of such interventions. Researchers have noted that in the 20 years or so prior to the financial crisis, pay increased substantially even as governance practices were generally evolving to increase shareholder power and as institutional ownership and shareholder activism were growing. In the economic literature, one interpretation of this trend has been that greater competitive pressures on companies, including from globalization, have increased the marginal value of the most capable leaders.

Yet there are real issues presented by executive pay. They are aspects of a more general problem in corporate governance, rooted in the familiar phenomenon of the principal and agent with differing interests — in this case, the separation of corporate ownership (in the hands of shareholders) and control (ultimately in the hands of managers). Will public-company boards and senior management cooperate to devise incentives that lead managers to serve the interests of shareholders, a large group of outsiders, despite the temptations for managers to engage in self-serving practices?

While it is possible for management to act against the interests of shareholders under the noses of an inattentive or overly loyal board, there are multiple sources of market-based discipline: The market for corporate control may lead to the ouster of underperforming or rent-extracting management as well as board members. Chief executives have an incentive to avoid risk to their reputations and future careers. And shareholders who become dissatisfied can readily vote with their feet by selling their shares. Despite some high-profile historical exceptions, these market mechanisms seem to do a reasonably efficient job in general.

One possible policy response is direct regulatory intervention to address managerial abuses. In the context of compensation, the Dodd-Frank Act does give regulators such powers in some circumstances. Critics who perceive a

greater incidence of management abuses do not, however, typically advocate direct government intervention with regard to those abuses. Rather, critics argue mainly for structural measures that will give boards greater power with regard to chief executives, and shareholders greater power with regard to boards. To the extent that such measures must be imposed from above by regulators, there remains the question of why more firms do not embrace them voluntarily, given the benefits that presumably would accrue in capital markets if the measures are believed to lead to better management and less rent-seeking.

Whatever one's view of the ability of market discipline to deter self-serving chief executives, there are cases where this discipline is likely to be impaired by government policy. One such case is when the firm has explicit or implicit backing from the government, as has often been true in the financial services industry. In that circumstance, debtholders may believe that they are protected in the event the institution fails, a belief that reduces the institution's cost of debt. Shareholders, in turn, have an incentive to exploit cheaper debt by increasing leverage — thereby increasing their tolerance for risk. Both debtholders and shareholders will have less concern about excessive risk-taking or rent-seeking on the part of management, and will likely impose less discipline. Thus, even though markets may align the interests of management and shareholders, the existence of a corporate safety net may cause those interests to be aligned in a socially undesirable way.

With regard to compensation, then, the most important task for financial regulators is not to limit the overall level of executive compensation; it is to see that compensation does not vary with the institution's financial results in a way that promotes inappropriate risk-taking that may create losses for the deposit insurance funds and, ultimately, taxpayers. This complex and difficult task is relatively new to financial regulators, but will be less burdensome the greater the influence of market discipline on executive compensation. To foster that discipline means continuing to contain the size and scope of the federal financial safety net. **RF**



JEFFREY M. LACKER
PRESIDENT
FEDERAL RESERVE BANK OF RICHMOND

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

From Bangladesh to Bank Town Microlender Extends Credit to the Entrepreneurial Poor

Charlotte, N.C., is home to Bank of America, which holds more than \$2.2 trillion in assets. The nation's second-largest bank will soon be joined there by a bank that operates on a micro scale: Grameen America, an outgrowth of the Bangladeshi microfinance institution Grameen Bank, plans to open a Charlotte branch in mid-2012.

Grameen America offers loans of \$1,500 or less to individuals living below the federal poverty line — \$22,314 for a family of four — who want to start a business, but typically don't have access to traditional credit. In Mecklenburg County, where Charlotte is located, the poverty rate is about 14 percent, close to the national average.

Most of the “microenterprises” opened by Grameen borrowers are services related to food, beauty, or clothing, such as a salon or a tailoring business. Grameen America has disbursed more than \$20 million to nearly 7,000 borrowers so far, with a repayment rate of more than 99 percent, according to the organization. The organization opened its first U.S. branch in January 2008 in Queens, N.Y. Since then, it has expanded to the Bronx, Brooklyn, and Manhattan; Indianapolis, Ind.; and Omaha, Neb., where Warren Buffett's daughter provided the seed money. Additional openings planned for 2012 include San Francisco and two more in New York City.

The secret behind the high repayment rates is the group lending model developed by economist

Muhammad Yunus in Bangladesh in 1976. Yunus received the Nobel Peace Prize in 2006 for his work in microfinance. Each prospective borrower finds four friends or family members who also want to take out loans to start their own businesses. This group then goes through a week of mandatory financial education, after which they meet weekly with other borrower groups. The goal is to create a “culture of financial responsibility” and provide opportunities for advice and encouragement. Every borrower also is required to save at least two dollars per week during the loan term. Grameen America can't accept deposits, but it partners with commercial banks to offer savings accounts to its borrowers.

Before the Charlotte branch can open its doors, organizers need to raise another \$1 million, in addition to the \$2 million raised so far, according to Joe Mynatt, the Charlotte campaign co-chair and the managing director of U.S. corporate banking at Wells Fargo. Wells Fargo has donated \$1 million to Grameen America, including \$500,000 for the Charlotte branch. Grameen America is not-for-profit, so new branches rely on donations to get started, with a goal of becoming self-sustaining within five years.

Microcredit has helped many Grameen borrowers start businesses in the developing world, where there is a large, informal microenterprise sector that operates free of regulation and taxes. In the United States, however, even operating a food cart requires a license, a health department inspection, and a permit. And unlike in developing countries, new U.S. businesses compete with established retailers, rather than against other microenterprises. Still, many are enthusiastic about the possibilities.

“We'll have families building their own business, working themselves out of poverty, in a way they never would have been able to otherwise,” says Mynatt. Given that jobs today are scarce and the national poverty rate is rising, many families hope he's right.

— JESSIE ROMERO

PHOTOGRAPH: COURTESY OF GRAMEEN AMERICA



An entrepreneur at the Grameen America Borrower's Market at St. John's University in New York City.

Signal Strength

Maryland Firm Adds Mobile App to Analytic Array

Suppose advertisers want information about how often the video game Angry Birds is downloaded to mobile devices. Or perhaps they're seeking information about mobile Facebook use. To help advertisers learn what users are watching and doing on mobile devices, the radio ratings company Arbitron of Columbia, Md., has acquired technology that measures such wireless audience preferences via smartphones and tablets. Selected panels of consumers opt in to participate.

Arbitron last summer acquired a Finnish company, Zokem Oy, with the technology to tap such preferences for market research firms in the wireless, Internet, media, and marketing industries. Arbitron reports that it paid \$11.7 million in cash, with possible additional payments of up to \$12 million based on performance. The company is now known as Arbitron Mobile.

Arbitron currently supplies radio audience ratings to advertisers, marketers, and radio stations. Its Portable

People Meter, or PPM, is the size of a pager, and tracks exposure to radio and television as participants wear it during the day. In October, CNBC and ESPN separately signed with Arbitron to measure content viewing outside the home using the PPMs, which were rolled out in 2006. (Some Arbitron survey participants instead use a paper-based system in which they record their listening habits in diary fashion.)

Arbitron Mobile is currently used in about a dozen countries, but as of yet has no syndicated panel in the United States. Arbitron Mobile spokeswoman Kim Meyers says demand for the application is growing, and the company will build out its use, through opt-in participant panels, in an as-yet undetermined time frame.

Arbitron moved its headquarters from New York to Columbia in 2009; the company employs roughly 950 people there, and a total of about 1,500 worldwide.

— BETTY JOYCE NASH

Moving Money

Some Customers Switch Banks Over Fee Flap

Credit unions got a boost in membership as consumers reacted last fall to proposed fee hikes at several large banks.

Credit unions, community banks, and small regional banks have steadily gained market share in recent years. By 2011, the smaller banks held 65 percent of the checking market, up from 55 percent in 2009, according to Moebis Services, a financial services economic research firm in Illinois.

Mark Wolff of the Credit Union National Association says the trade group's surveys indicate credit unions got 40,000 new members on Nov. 5, "bank transfer day." This social-media protest urged customers of the nation's biggest banks to move accounts to neighborhood institutions.

However, if customers who move to credit unions hold small balances and don't buy the banks' products, then the banks may not miss them much, analysts say. It costs more money for big banks to maintain checking accounts, \$350 to \$450 compared to \$175 to \$250 for smaller banks, according to Moebis.

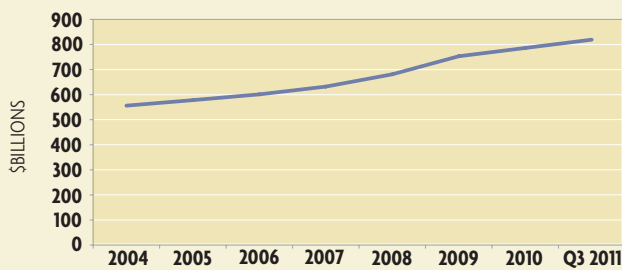
Credit unions want the business, especially that of

young people. The average age of a credit union member is 47, according to Wolff. Young people have been opening more accounts as of late, and as they mature, they'll need services. "These young people will be moving into their borrowing years," he says.

Members Credit Union in Winston-Salem, N.C., had already started a "Break Up With Your Bank" ad campaign well before November. Located in the Piedmont Triad, where furniture and textile manufacturing continue to fade, the credit union has lost members in recent years. (Some of its 450 firm affiliates are manufacturing firms in those traditional industries.)

New checking accounts are valuable, according to credit union officials. "If you're doing your primary checking with us, you're probably going to come to us with your loans," says Joe Mecca, Coastal Federal Credit Union's marketing manager. Coastal is based in Raleigh, N.C., and opened more than twice its usual number of checking accounts in October 2011 — 1,800 compared to a typical 800 per month. During the fourth quarter, Coastal opened 4,100 new checking accounts, a 57.6 percent jump over the previous quarter and a 101.7 percent

Credit Union Deposits



SOURCE: National Credit Union Administration

increase over fourth quarter 2010.

West Virginia Credit Union League members reported scant new business, according to Rich Shaffer, vice president. He speculates that it's because there are relatively few big bank branches in West Virginia.

Credit unions return profits to members in the form of more services and lower fees — they don't have shareholders and don't pay federal income taxes. About 91 million people are members of the 7,794 credit unions nationwide; credit unions have held roughly 6.7 percent of

household assets over 25 years. Credit unions are comprised of members who share geographical location, employment, or an association membership.

Whether the number of exiting customers is large enough to hurt the big banks remains to be seen; analysts say it's unlikely. But consumer preferences may be changing. "There's enough retail dissatisfaction out there, especially regarding the big banks, in the wake of the mortgage crisis and ensuing recession, to suggest a structural change in consumer behavior regarding bank price increases," says Tony Plath, associate professor of finance at the University of North Carolina at Charlotte.

Bank of America doesn't break out checking account numbers, according to spokeswoman Betty Riess; overall deposit balances in the fourth quarter of 2011 were up \$25 billion over the same period in 2010.

— BETTY JOYCE NASH

Checkout Change

West Virginia Plans Food Tax Phase-Out

Shoppers in West Virginia pay lower taxes on food these days. On Jan. 1, 2012, the 3 percent sales tax on groceries fell to 2 percent; on July 1, it will drop to 1 percent, and then disappear entirely on July 1, 2013, provided that the state's rainy-day fund meets requirements. The general sales tax will remain at the current rate of 6 percent.

All states in the Fifth District offer some form of tax relief on food purchased for the home. Maryland exempts it from taxation; North and South Carolina have no state tax on food but allow it to be taxed at the local level. Virginia taxes groceries at half the state's general sales tax rate of 5 percent. West Virginia's change marks its second foray into food tax exemptions. In the early 1980s, the state phased out sales tax on groceries, but later fiscal difficulties led to its reinstatement in 1989.

State legislators argued in favor of eliminating taxes on groceries on the grounds that they are regressive — that is, they have a disproportionately higher impact on low-income consumers who spend a greater percentage of their wages on basic needs. Food stamp users, however, are already exempt from paying the tax, notes Tom Witt, the director of the West Virginia University Bureau of Business and Economic Research. That shields the lowest-income consumers from the tax even without an across-the-board exemption. "So the food tax is not as regressive as some people would claim," he says.

From a revenue perspective, there are arguments for keeping the tax. Although revenue from the tax on groceries comprised only about 2 percent of overall state revenue for fiscal year 2009-2010, that revenue is fairly stable against swings in the economy, helping state revenue forecasters make more accurate estimates. (See "Toil and Trouble for Revenue Forecasters," *Region Focus*, Third Quarter 2011.)

"As revenue forecasters, we usually like sales taxes on groceries," says Mark Muchow, West Virginia's deputy secretary of revenue. "They're pretty dependable in good times and bad."

Increased revenues from severance taxes on the energy sector in the late 1970s spurred the state's decision to eliminate the tax on groceries the first time. The last decade has also been marked by rising energy prices. Muchow says West Virginia now has one of the healthiest rainy-day funds in the country. But will relying on less predictable sources of revenue force the state to reinstate the grocery tax if energy prices fall?

"I don't think that's something that's likely to happen anytime in the near future," says Muchow. He points to West Virginia's roughly \$1 billion in reserves, putting it in a much stronger financial position relative to 1989. "Until those reserves are fully exhausted, I don't see this tax coming back up, even if the energy sector were to collapse."

— TIM SABLİK

On a Roll SC Lands Two Giant Tire-Factory Deals

In the fall of 2011, two global tire manufacturers, Bridgestone and Continental, announced plans to expand aggressively in South Carolina.

Tokyo-based Bridgestone Corp. expects to invest \$1.2 billion over the next nine years to build a new plant and expand an existing facility in Aiken County. Meanwhile, Continental AG, based in Hanover, Germany, plans to invest \$500 million to build a new plant in Sumter County and expand its American headquarters in Lancaster County.

Bridgestone expects its new 1.5 million-square-foot plant, which would make tires for heavy trucks and equipment, to employ 330 workers by 2015 and 550 workers by 2020. The 740,000-square-foot expansion of Bridgestone's existing plant, which makes tires for cars and light trucks, would generate another 300 jobs by 2015.

Two weeks after Bridgestone's announcement, Continental Tire the Americas (CTA) unveiled plans to build a 1 million-square-foot plant and hire more than 1,600 workers by 2020. The company also expects to hire an additional 80 people at its CTA headquarters during the next four years.

"Increasing demand for Continental and General brand passenger and light truck tires in the United States, as well as the improved business results of CTA, has made this significant investment possible," says Nikolai Setzer, head of Continental's tire division.

South Carolina sweetened the deal with a \$31 million grant to help Continental purchase and prepare the site for the new plant, and Sumter County is tapping a \$4 million federal grant to improve infrastructure related to the project. Bridgestone also would benefit from similar grants

worth \$15.5 million and state job-development credits of unspecified value. At press time, a spokesman for the South Carolina Department of Commerce said the contract valuing the job-development credits would be exempt from public disclosure until it has been finalized and executed.

Incentives may have steered these latest expansions to South Carolina, but there seems to be a trend toward manufacturing tires closer to where they will be sold, says Saul Ludwig, a tire industry analyst and managing director at Northcoast Research, an equity research firm in Cleveland. In addition to the two South Carolina announcements, he points to recent or planned expansions in Illinois, Tennessee, and Georgia.

Ludwig attributes this emerging trend to four factors: two-tiered union contracts with lower pay scales for new workers, manufacturing processes that require less labor, higher transportation costs, and growing wages for Chinese workers.

"I think you can extrapolate [those factors] from tires to other industries," Ludwig says. "There is, in my mind, a tiny glimmer of hope for American manufacturing."

— KARL RHODES



Workers inspect tires at Bridgestone's Aiken County plant.

Hurricane Irene Mutual-Aid Pacts Speed Power Recovery

Five days before Hurricane Irene slammed the North Carolina coast in August 2011, power companies along the Eastern Seaboard started asking for help from their counterparts in other states.

Mutual-aid agreements among electric utilities go back at least to the 1960s, but the scope of cooperation in the wake of Hurricane Irene was unprecedented in the Fifth District. Before the massive storm hit, convoys of bucket trucks and other equipment were en route from as far away as Minnesota and Texas.

Progress Energy Carolinas, which serves much of the North and South Carolina coast, employs about 300 line

workers. Following Irene, that small battalion swelled to 1,200 line workers and tree cutters, plus 1,000 support personnel, including reinforcements from Georgia, Arkansas, and Florida. The extra help allowed the company to restore power to nearly 440,000 customers in five days.

Progress Energy Florida sent 250 line workers and support personnel to its sister company. The company is a member of the Southeastern Electric Exchange (SEE), a consortium of electric utilities that help each other recover from major storms.

"Irene would have been a multiweek prospect for

Dominion without the help of mutual assistance crews and contractors,” says David Botkins, a spokesman for Dominion Virginia Power. But with assistance from utilities in 20 states, including Michigan and Indiana, Dominion was able to restore power to nearly 1.2 million customers in nine days.

Mutual-aid agreements allow members to base their employment and equipment levels on routine operating conditions. To recover from major storms, they can borrow resources from their neighbors and — in the case of Irene — from their neighbors’ neighbors. Host companies reimburse responding utilities on a break-even basis. Host companies honor the responding utilities’ pay scales and union agreements, and the responding utilities abide by the host companies’ work practices and safety procedures.

In the wake of Irene, mutual aid was especially important to Baltimore Gas and Electric (BGE). The storm affected 750,000 of its 1.2 million electricity customers, and some of them lost power multiple times. But the company fixed nearly all of the outages in five days.

“Well in advance of the storm’s arrival in Central Maryland, BGE proactively secured additional resources to ensure it could begin the monumental restoration effort as soon as it was safe to do so,” the company reported on Sept. 4. “In all, more than 2,300 external resources from 18 states have been actively engaged in the restoration effort.”

Three days after that announcement, more heavy rain inundated Central Maryland, and approximately 200 of the out-of-state linemen and support personnel extended their stays.

— KARL RHODES

The New Beetle A Pest Has Invaded the District

West Virginia and parts of Maryland and Virginia are under quarantine, along with 11 other Central and Mid-Atlantic states. Not because of a deadly new virus — instead, the threat is the spread of the emerald ash borer, an invasive beetle that has already killed more than 70 million ash trees in the United States. The borers may be as destructive as Dutch elm disease and chestnut blight, which brought those species to near extinction in Europe and North America.

Between June and October of 2011, the pest was found in 11 new counties in West Virginia, bringing the county total to 17 since 2007. It has been found in three counties in Maryland and three counties in Virginia since 2008. The borer most likely arrived in the United States via wood packaging in a shipment from Asia, and the first official sighting was in Detroit in 2002. The borer commonly hitchhikes on firewood and other wood products. Infested states prohibit interstate firewood transport, and require manufacturers to follow strict treatment guidelines before they can ship products out of state. Ash trees make up 10 percent to 40 percent of the canopy in many urban areas, including Baltimore, which borders infested counties.

The estimated “landscape value” of an urban ash tree — its aesthetic and ecological benefits — is about \$1,000, according to researchers at Ohio State University and the U.S. Department of Agriculture (USDA). One medium-sized tree is reported to increase a home’s property value



Adult emerald ash borers live for about three weeks and are less than half an inch long.

by 0.8 percent. Losses in the entire Baltimore metro area could total more than \$220 million, according to the USDA. Ash is also an important wood for flooring, furniture, farming tools, and sports equipment, including Louisville Slugger baseball bats. The ash trees in West Virginia’s forests have a market value of \$199 million, says Greg Cook, the state’s deputy forester.

Unfortunately, “there’s not a whole lot you can do for it,” says Sherrie Hutchinson, director of the Plant Industries Division at the West Virginia Department of Agriculture. Borers can kill a healthy ash tree in less than two years. While pesticide treatments can help protect against the borer, once a tree is infested, removal is usually the only option. According to research published in the journal *Ecological Economics*, the cost of treating and removing infested ash trees in developed areas could total \$10 billion by 2019.

— JESSIE ROMERO

Tribes Seek Uncle Sam's Seal of Approval

BY CHARLES GERENA

Native Americans were part of the fabric of Virginia well before English settlers landed in Jamestown in 1607. Yet none of the 11 tribes that are formally recognized by the state has succeeded in convincing the federal government of their legitimacy, something they have tried to do since at least the 1920s.

The U.S. Senate is considering a bill to recognize six Virginia tribes — the Chickahominy, Eastern Chickahominy, Upper Mattaponi, Rappahannock, Monacan Indian Nation, and Nansemond. A similar bill is pending in the House of Representatives. Meanwhile, the Lumbee Tribe of North Carolina, which is taking a similar legislative route to gaining federal recognition, has fought to solidify its sovereignty since the 1880s.

Why are these tribes so persistent? One reason is that federal recognition clearly delineates a government-to-government relationship with Uncle Sam, giving tribes legal standing to lay claim to the territory they once occupied. It also enables tribes to protect their land from encroachment by placing it in a trust. (On the downside, putting land in a trust complicates economic development efforts, since projects often need federal approval.) Finally, federally recognized tribes qualify for grants to fund housing and water and sewer improvements in their communities.

For a tribe's enrolled members, federal recognition affords access to a variety of programs administered by the U.S. Bureau of Indian Affairs (BIA), the Indian Health Service, and other agencies. These include health clinics for individuals and a revolving loan fund for business owners. In addition, tribe members who live on lands held in trust don't pay state property taxes.

Lastly, recognition is meaningful on an emotional level. "We've always been acknowledged by the state, but federal recognition will put us on par with other tribes across the country," notes Wayne Adkins, first assistant chief of the Chickahominy Indian Tribe. "The Chickahominy have a history that is just as rich as those tribes. We helped the settlers survive at Jamestown."

In the absence of a federal seal of approval, state recognition confers a degree of legal "Indianness" on tribes that qualify for assistance from agencies like the Department of Housing and Urban Development and the Economic Development Administration. But it does not confer most of the benefits afforded to federally recognized tribes, chief among them the ability to govern themselves.

In the Fifth District, the Eastern Band of Cherokee Indians achieved federal recognition in 1868 — three decades after thousands of Cherokee were forcibly relocated to Oklahoma, leaving only a few behind in western North Carolina. Today, the Eastern Band's 14,000 enrolled

members control an area larger than the District of Columbia. The Catawba Indian Nation in South Carolina first gained federal recognition in 1943. But their status was terminated in 1959 and it took 34 years to regain it.

The recognition of Native American tribes has changed a great deal over the years. A formal administrative process was established by the BIA in 1978 and revised in 1994. Previously, Congress decided the issue through legislation. The idea was to create a path to recognition that was more consistent and less politicized.

Many tribes, however, have a hard time meeting the strict criteria. For example, Virginia's tribes don't have the genealogical records to prove their continued, uninterrupted existence, even though their presence in Virginia predates the days of Pocahontas and Capt. John Smith. After the General Assembly passed the Racial Integrity Act in 1924, Native Americans had the race on their birth records changed to "colored" because it was one of only two racial designations permitted in Virginia — "white" being the other. This eliminated all documentary evidence of tribes within the state.

Why has it become so hard for an Indian to officially be considered an Indian? "At first, land and fishing rights claims caused the ratcheting up of required documentation," says Mark Miller, a history professor at Southern Utah University who has written about the recognition process. "But the introduction of Indian gaming in the late 1980s is the number-one reason that the BIA federal acknowledgment process has become so controversial."

Federally recognized tribes have the sovereign right to operate gaming facilities like bingo parlors and casinos without being subject to state regulation. They do have to negotiate a compact with the state before offering games other than bingo or cards and the facilities have to be otherwise permissible under state law.

Still, "fear of new casinos has caused local towns, conservative religious groups, and neighborhood organizations to come out against many groups seeking federal recognition," notes Miller. (None of Virginia's tribes has expressed interest in operating gaming facilities and the legislation pending in Congress to recognize the tribes prohibits them from doing so.) Local governments lose something else if a Native American tribe gains federal recognition — they cannot impose taxes or land-use regulations on tribal lands.

Despite this opposition, Virginia's tribal leaders are pressing forward with their efforts. "There are some economic opportunities that the federal government offers tribes," notes Adkins. "But a lot of this has to do with pride. Our ancestors were discriminated against and recognition is a way of restoring some of that pride." **RF**

Checking the Paychecks

BY DAVID A. PRICE

The Dodd-Frank Act gives shareholders, boards, and regulators new powers over pay

Although the 2010 Dodd-Frank Act is commonly known as a Wall Street reform law, addressing the regulation of financial companies, some of its provisions deal with public companies in general. High on the list of these is a group of provisions that will shape — and in some cases, is already shaping — the way companies set the compensation of their executives. In addition, with regard to financial institutions, the Act gives regulators the authority to directly control the compensation arrangements of both executives and lower-level employees whose pay is based partly on incentives.

The Act's pay provisions emerged in response to the 2008 financial crisis, which policymakers believed was caused in part by incentive programs at financial institutions that encouraged excessive risk-taking on the part of executives, and which rewarded lower-level employees for loan volume more than loan quality and performance. Yet the provisions are also rooted in concerns that existed before the crisis: that of “pay without performance” — in short, a perceived lack of alignment between executives' incentives and the interests of shareholders — and that of income disparity between top-level executives and other employees.

A Long-Simmering Issue

Prior to the 1930s, public companies were not required to disclose the compensation received by any executives, so it rarely became known even to shareholders. Early in that decade, shareholder litigation led to the revelation of executive pay at two major companies, Bethlehem Steel and American Tobacco. Bethlehem's president, the public learned, had received \$1.6 million in 1929 (equivalent to \$20.4 million today), and executives at both companies benefited from bonuses that the public viewed as scandalous. An Interstate Commerce Commission report in 1932 on the high salaries of railroad executives added fuel to the fire at a time when economic suffering was widespread.

“There were years when American Tobacco or Bethlehem Steel were not doing that great, and executives still got big bonuses,” says Harwell Wells, a Temple University law professor who has studied the 1930s-era controversy over executive pay. “At the same time, there was anger about job losses and wage cuts.”

Congress responded by mandating annual disclosures of

executive compensation. Those mandates, incorporated into securities legislation in 1933 and 1934, are still in effect. In addition, Congress enacted large increases in individual income tax rates in 1935, in response to both anger about income inequality and a desire for more federal revenue.

Although the issue of compensation viewed as excessive did not entirely disappear, it became much less prominent from the 1940s to the 1970s as the rate of growth in executive pay slowed down and as postwar prosperity — including a large U.S. manufacturing sector — led to a bidding-up of the wages of less-skilled workers. The issue returned to the public eye in the 1980s, in part, Wells says, in response to developments in the auto industry. “The auto industry got in trouble financially and asked for givebacks from the unions, then its executives paid themselves significant bonuses when the industry started doing better.”

Media attention to the topic intensified in the early 1990s, leading in part to the enactment of tax rules in 1993 that barred companies from deducting compensation expenses above \$1 million for an executive, except for performance-based compensation. Some scholars believe this change had the unintended consequence of accelerating the growth of executive pay, however, as companies responded by shifting a greater proportion of pay from straight salary to stock grants and option grants — the value of which took off during the 1990s stock market boom.

In the time since, executive pay has become a burgeoning area of scholarship, as well as an area in which policymakers have become increasingly confident of their ability to curb potential abuses by determining the best governance practices related to compensation, and, in the case of financial institutions, by regulating actual pay arrangements.

Empowered Shareholders and Fortified Compensation Committees

One governance practice that the Dodd-Frank Act requires of public companies is “say on pay,” a nonbinding vote of shareholders on the pay packages of executive officers. Companies must hold “say on pay” votes at least every three years. (Shareholders vote at least every six years to determine how often the company's “say on pay” votes will take place — every year, every two years, or every three years.)

The first votes took place starting in January 2011. According to the compensation-research firm Equilar, out of the 2,252 companies from the Russell 3000 index that held votes between Jan. 21 and June 30, only 38 saw shareholders reject management's pay packages. Almost 75 percent of firms won with 90 percent or higher approval. In addition, out of 686 companies from the group that presented equity

incentive plans for a vote, only six saw those plans rejected.

Although packages have rarely been disapproved, the process has “pushed the dialogue between companies and shareholders to a new level of clarity,” says Aaron Boyd, Equilar’s head of research. “Companies are trying to do a better job of explaining their pay policies to shareholders.”

The concept has some critics. Before passage of the Act, in a 2009 article in the *Harvard Journal on Legislation*, Jeffrey Gordon of Columbia University Law School argued for an “opt-in” version of the regime, in which federal law would allow shareholders to require their companies to participate — or not. Gordon and others argue that shareholders, especially institutional ones, will rely excessively on proxy advisory firms to determine how to vote.

“A lot of the votes seem to be driven by recommendations from proxy advisory companies,” says Stanford University Business School professor David Larcker. “They have models they’ve developed that make recommendations, and these recommendations are used by mutual funds and other big institutions and sometimes individual shareholders. What’s unknown is whether those recommendations are even remotely correct.”

The Dodd-Frank Act also sets governance rules by mandating that executive pay at public companies be determined by a compensation committee made up of independent board members. The committees have the right to engage their own compensation consultants and legal counsel, a measure that is intended to counterbalance the influence of management’s own consultants and lawyers. The Act aims to further the independence of compensation decisionmaking from management and inside directors, much as the Sarbanes-Oxley Act of 2002 increased the autonomy of the audit function. (Less stringent versions of the compensation-committee requirements had been adopted by the New York Stock Exchange and NASDAQ in 2003.)

These requirements are based in part on a view that management has too much influence on boards, and that increasing the power of independent board members will thus tend to improve the board’s decisionmaking and the company’s performance. But is there actually a positive relationship between the clout of independent board members and company performance?

A number of studies cast doubt on that assumption. For example, a National Bureau of Economic Research paper in 2009 by Andrea Beltratti of Bocconi University and René Stulz of Ohio State University, which looked at 98 banks worldwide with more than \$10 billion in assets in 2006, found that the best-performing banks during the financial crisis actually tended to have less shareholder-friendly boards (as measured by governance “best practices”). The authors noted earlier literature indicating that if shareholders believe a firm will not be allowed to fail, they may prefer that it engage in greater risk-taking. Thus, the excessive risk-taking that led to losses during the financial crisis may have been well-aligned with the perceived interests of

shareholders — and encouraged, rather than restrained, by good-governance-based boards.

Regulating Incentive-Based Pay

The Dodd-Frank Act gives additional attention to pay at certain financial institutions with \$1 billion or more in assets, including banks, broker-dealers, investment advisory firms, and some others. At these institutions, federal regulators must supervise incentive pay practices, not only for executives, but also for lower-level employees to ensure that incentives do not promote undue risk-taking by providing “excessive compensation” and that they do not encourage undue risks that could bring about “material financial loss.”

These provisions are based on a concern that financial institutions have not been considering risk closely enough when setting up incentive compensation programs. Policymakers were particularly concerned that incentives based on short-term measures of revenue or loan volume — without countervailing consequences if the business later led to losses — may have encouraged employees to take imprudent risks.

While there is a large body of literature on compensation of chief executive officers, whose pay is publicly reported under Securities and Exchange Commission regulations, there has been far less research on the effects of incentive pay for loan officers and other lower-level employees, whose pay information is proprietary. Research by Richmond Fed economists Arantxa Jarque and Edward S. Prescott may shed light on risks generated by incentive programs for lower-level employees. In a forthcoming working paper, they find that the issues in regulating loan officers’ pay are highly different from those in regulating the pay of top executives.

“We’re looking at pay for large groups, where no one person makes decisions large enough to make or break the bank,” Prescott says. “When you have lots of people and give them lots of incentive, if the risks are not correlated, the risks may average out. What you have to worry about is loan officers making loans that turn out to be bets on a single thing.”

The lower-level employees are also subject to an organizational structure, Jarque and Prescott note, such as an underwriting department that approves or disapproves the loan applications brought in by the loan officers. On account of the risk-pooling nature of loan officer positions and their institutional setting, Prescott says, paying loan officers hefty performance-based incentives may be no more risky to the bank — and in some circumstances, even less risky — than if loan officers receive a fixed wage.

Although the Fed and other bank regulators have not yet issued final regulations on incentive compensation policies, it is clear that the Dodd-Frank pay rules will have a significant effect on one of the primary tools that boards use to guide and reward senior management, and which management uses to guide and reward lower-level employees. **RF**

JARGON ALERT

Velocity of Money

BY KARL RHODES

In the past few years, the Federal Reserve has greatly expanded the monetary base to fight the recession of 2007-09 and bolster the recovery. But this monetary accommodation has produced neither strong output growth nor significantly higher prices. The money supply has increased significantly, but spending growth has been tepid. So where did all that money go?

The answer lies partly in a concept called the velocity of money. Velocity is simply the number of times that a dollar is spent during a certain time frame, usually one year. Suppose, for example, that Chuck and Wilson become stranded on an island. They each have \$50, bringing the island's total money supply to \$100. During their first year as castaways, Wilson paid Chuck \$50 for crabs, and Chuck paid Wilson \$50 for fire-starting lessons. Wilson paid Chuck \$50 for coconuts, and Chuck paid Wilson \$50 for dental work. Even though their total money supply was only \$100, they were able to spend \$200 because they spent each of their dollars twice on average. So the velocity of money on the island that year was two.

On the island, the money supply consists only of cash, but in the U.S. economy, the composition of the money supply is more complex. The strictest definition of money, M₁, consists of cash, traveler's checks, and bank deposits that can be accessed by writing checks. A broader classification of money, M₂, includes all of M₁ plus money held in savings accounts, certificates of deposit under \$100,000, and money market funds held by individuals. A third definition of money — money with zero maturity, or MZM — includes all of M₂ minus the certificates of deposit plus money market funds held by institutions.

The Federal Reserve Bank of St. Louis tracks velocities associated with each of these classifications of money. The velocity of M₂ remained fairly constant from the mid-1950s until the late 1970s. During this era, monetarists, led by Milton Friedman, believed that velocity was stable in the short run and that it changed only slowly in the long run. If velocity remained constant, an increase in the money supply would equal the growth rate of prices plus the growth rate of output. If money growth did not influence output, then it would cause prices to rise in lock step with the money supply.

Beginning in the late 1970s, however, financial and technological innovations began to lessen the perceived need for people to hold large precautionary balances of money. M₂ velocity increased dramatically as new types of invest-

ments — particularly mutual funds of stocks and bonds — became increasingly popular and accessible. People could hold wealth in these more lucrative investments that they could easily convert to money when they needed to purchase goods and services. This trend limited the growth of the M₂ money supply and promoted the growth of M₂ velocity.

M₂ velocity peaked above 2.1 in the late 1990s before falling dramatically during the recession of 2001 and again during the recession of 2007-09. It now stands at about 1.6. Meanwhile, M₁ velocity increased from seven in the early 1980s to more than 10 in 2007 before falling back to about seven during the recession and recovery. MZM velocity rose to nearly 3.5 in the early 1980s and has trended downward to 1.5.

These wide variations in velocity indicate that people have made significant and long-lasting adjustments to their spending habits in response to financial innovations, economic conditions, and expectations regarding employment, income, inflation, and relative interest rates. Perhaps the most significant determinant of velocity is the opportunity cost of holding money instead of investing in assets that have higher potential returns and higher potential risks.

So it is not surprising that velocity plummeted during the recession of 2007-09 and has continued to fall during the recovery. Consumers once again feel the need to hold larger precautionary balances, and the opportunity cost of doing so seems small because bond yields are exceptionally low and stock prices are highly volatile. Much of the money that flowed out of stock mutual funds during the past five years remains in relatively stagnant pools of liquid investments.

This dramatic decline in velocity throughout the recession and recovery has largely offset the effects of accommodative monetary policy. MZM velocity and M₂ velocity have reverted to levels not seen since the 1960s, but velocity seems to have become more of an economic wild card than the predictable factor that Friedman expected. One of Friedman's contemporaries, economist Paul Samuelson, summed it up this way in his classic 1948 textbook: "You can force money on the system in exchange for government bonds ... but you can't make the money circulate against new goods and new jobs." Nevertheless, the insights from Friedman's work have been important to understanding the dynamics of inflation and the role that velocity plays in determining prices. **RF**



How Consumers Respond to Stimulus Payments

BY LOUIS SEARS

Using rational expectations models, some economists have suggested that households with substantial savings and investments will gradually adjust, or “smooth,” their spending when their earnings rise or fall in the short term. Households do this by cashing out some of their investments during a recession, and saving more during good times. Their behavior should become even more stable as their net worth increases. In fact, in some models, only those with little or no wealth will dramatically alter their spending because of income changes.

Greg Kaplan of the University of Pennsylvania and Giovanni Violante of New York University test this theory by looking at data from 2001, when a tax rebate, as part of a longer-term tax cut, occurred during a recession. They find that there were not enough poor households to explain the large aggregate increase in consumption that followed the rebate. They also find that this increase was not made smoothly over time after the announcement of the rebate, but instead occurred abruptly following the actual receipt of rebate checks. The authors propose a model that differentiates between liquid and illiquid assets held by households, and find that many wealthy households live “hand to mouth,” consuming only from their income each period, rather than using their wealth to smooth consumption.

The authors argue that consumption patterns are largely determined by the composition of net worth among households. Many wealthy households store their wealth in illiquid vehicles such as retirement accounts and real estate. These investments generate high returns over time on average, but a substantial amount of their value would be lost or foregone if households were to liquidate them prematurely. As a result, many households that are wealthy on paper have barely enough liquidity to pay their current bills, and would prefer not to access their less liquid assets. Accordingly, the authors hypothesize that they would behave similarly to families with low net worth.

Kaplan and Violante construct a model in which households can either hold their earnings as cash to spend on consumption, or invest their earnings in illiquid assets, minus a fixed transaction fee to either deposit or withdraw. They base the return on investments on the historical growth rate of real estate, savings bonds, equities, and other investments since 1960. They then divide the households into 15 subgroups based on different levels of holdings in each type of asset, as well as their overall level of net worth,

and calibrate the proportions of each subgroup to match the data. Finally, they simulate households’ responses to a tax rebate at different points during their lifecycle.

By varying the fixed cost of accessing savings, the authors are able to produce results that match the data from the 2001 rebate. They also provide an account of how these costs affect consumption in general. As expected, when transaction costs are high, households are less likely to draw upon their illiquid investments, and live hand to mouth, consuming more of their new income, including their rebates. They find that a per-transaction cost between \$500 and \$1,000 produces behavior matching the data from 2001. While higher fixed costs increase the share of the rebate that households consume, this share grows slowly after costs reach beyond \$1,000. Finally, the authors find that the net worth of those with the largest response to the rebate was similar to those with the smallest. Both groups were comprised of some of the highest earners, suggesting that illiquidity can essentially negate

“A Model of the Consumption Response to Fiscal Stimulus Payments.”

Greg Kaplan and Giovanni L. Violante.
National Bureau of Economic Research
Working Paper No. 17338,
August 2011.

the effects of wealth on consumption smoothing.

Kaplan and Violante’s study has potential implications for fiscal policy, particularly during recessions. First, the authors find that a tax rebate as part of a longer-term cut in taxes significantly increases the immediate consumption response of hand-to-mouth households. Under these circumstances, households view themselves as wealthier in the long term, but since accessing their investments is expensive, the rebate is the cheapest way to consume out of their future income. Second, the authors find that recessions increase the consumption response to new income. For households with high net worth but little access to it, a drop in their current earnings has a more severe impact than if they were better able to smooth consumption. In fact, the combination of tax reform and recession, which occurred in 2001, sharply increased the average consumption response to the rebate.

Kaplan and Violante’s model allows policymakers to anticipate consumption responses with more accuracy by distinguishing between households with different levels of liquid wealth. It also emphasizes the need to understand how the costs of accessing wealth can affect consumption. Although the model is simplified in only allowing for one type of illiquid asset with a fixed transaction cost over time, it opens the door to further research on different sources of illiquidity and how they can constrain consumption.

RF

AMERICAN MADE

The manufacturing sector is stronger than you might think — but new vulnerabilities are emerging

BY JESSIE ROMERO

In 1990, nearly 90,000 North Carolinians worked in furniture manufacturing; today, that number is about 36,000. Hundreds of plants have closed, mainly due to competition from overseas producers. In the Greater Hickory area, at the center of the once-booming industry, the unemployment rate is nearly 12 percent, the second highest in the state.

But central North Carolina hasn't given up on manufacturing, says John Enamait, dean of the School of Business, Industry and Technology at Catawba Valley Community College, located in Hickory. The difference is that now it's working to attract new, high-tech companies, and retraining the workforce to use robots and computers instead of their hands. "It's not the manufacturing we're accustomed to. Folks need to have more advanced skills than just being able to run traditional manufacturing equipment."

The North Carolina furniture industry exemplifies changes that are occurring nationwide. Low-skilled, labor-intensive goods are now largely made in other countries, and the remaining companies employ more machines and fewer people than ever before. For some observers, the marked loss of manufacturing jobs, combined with the growing U.S. trade deficit, signals that U.S. manufacturing is in a state of permanent and problematic decline. Yet there are many indications that the manufacturing sector is in fact quite healthy.

The United States remains the world's largest manufacturer (as measured by real value added), and prior to the 2007-09 recession, output was at its highest level ever, even as the number of workers was at its lowest up to that point (see chart). This seeming paradox is explained by dramatic increases in productivity, which has risen faster in manufacturing than in the nonfarm business sector as a whole. In this view, rather than declining, the manufacturing

sector is transitioning into a highly efficient producer of high-tech goods. And while this transition is painful for the people and communities that lose jobs, such changes lead to higher incomes and living standards overall.

A portion of manufacturing's rapid productivity gains, however, seems to reflect the increased use of overseas suppliers rather than genuine improvements in domestic technology or worker productivity. In addition, many companies have stayed competitive by adopting a business model in which low-value-added production is moved offshore while high-value-added services such as product design and research and development (R&D) remain in the United States. But some observers question whether this model is leading to an erosion of the country's "industrial commons," thereby making it more difficult for U.S. firms to remain competitive in the future.

A Changing Sector

Manufacturing is highly sensitive to swings in the business cycle. Much of the demand for manufactured goods comes from businesses investing in new equipment and consumer purchases of durable goods such as cars and refrigerators. During a recession, demand dries up. This was especially true during the 2007-09 recession. Overall output in the United States fell about 5 percent, but manufacturing output fell 20 percent; losses in manufacturing accounted for nearly half of the total loss in GDP. Employment also declined disproportionately: Between the end of 2007, when the recession began, and the end of 2009, when the unemployment rate finally stopped rising, manufacturing lost more than 16 percent of its workforce, compared to 6 percent of the workforce overall.

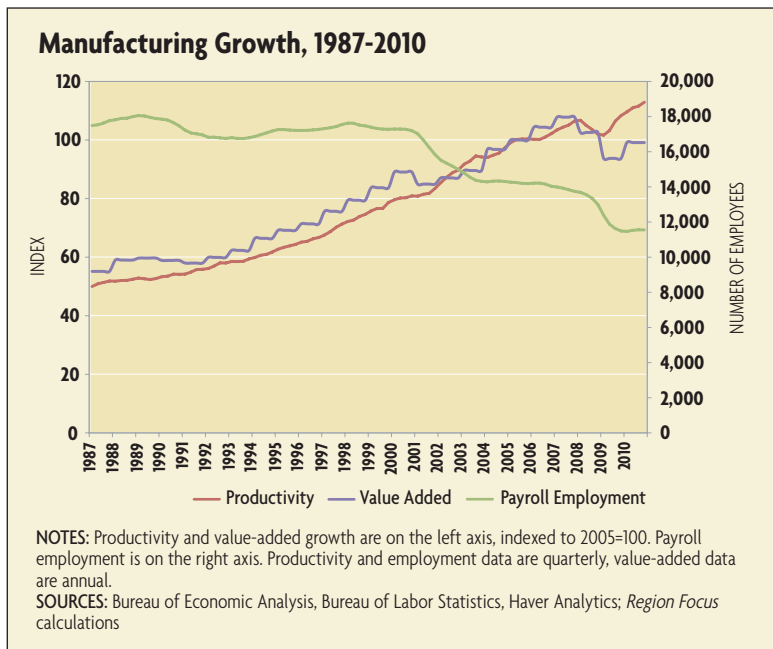
Since then, however, the news in manufacturing has been relatively rosy. Growth in manufacturing output has outpaced growth in the economy overall. The relative weakness of the dollar has boosted exports, and businesses and households can't put off spending forever, explains Dan Meckstroth, chief economist at the Manufacturers Alliance for Productivity and Innovation (MAPI), an industry research group. "The recession was so long, so severe, that there was a lot of pent-up demand" for items such as cars and machinery, he says. Now, those industries are growing quickly, although output has regained only about half of the recession-related losses, and Meckstroth projects that it will not be fully recovered until 2014.

Although the sector's share of nominal GDP fell from 17.4 percent in the late 1980s to 11.8 percent in 2010, the decline is due to the fact that the relative price of manufactured goods has fallen as firms learn how to produce them more efficiently. Adjusting for price changes, during the same period manufacturing has remained about 12 percent of real GDP. The growth in manufacturing real value added — the Bureau of Economic Analysis's

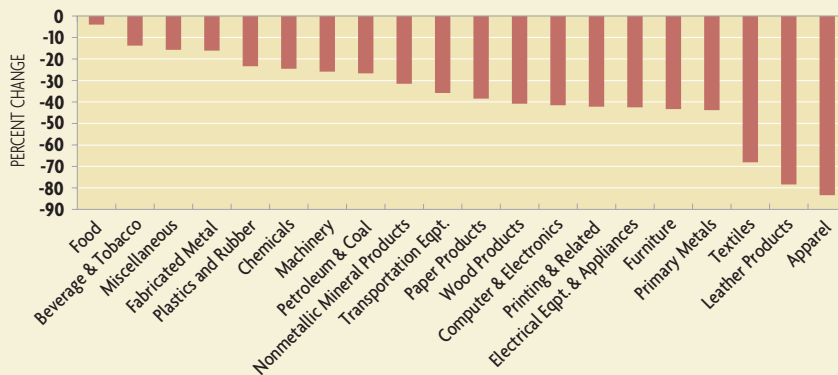
measure of a sector's output — has largely kept pace with output growth in the overall nonfarm business sector, and about doubled between 1987 and 2007. (Value added is a measure that avoids double counting goods when calculating GDP. For example, if an automaker purchases \$3,000 worth of materials to build a car that it sells to the dealer for \$5,000, the value added by the automaker is \$2,000. When the dealer sells the car for \$7,000, the dealer's value added is \$2,000.)

U.S. manufacturers increasingly produce more advanced goods such as aircraft and specialized industrial equipment. What's left of the textile industry in North and South Carolina, for example, "has evolved," says Rick Kaglic, a regional economist at the Richmond Fed. "They're no longer producing cotton for jeans — they're making bullet-proof vests and high-tech fabric for the interiors of fighter jets." And at many firms, services such as engineering and product design have become more embedded in the value of their products. At TIGHitco, an aerospace components manufacturer based in Atlanta that is building a new facility in Charleston, S.C., "engineering services have absolutely become an increasing part of our business," says Jay Tiedemann, executive vice president and chief operating officer of the InterTech Group, TIGHitco's parent company. "More and more our customers want to partner with us to design a new solution to a problem."

Manufacturing employment, on the other hand, has been on a steady decline for decades. In 1970, 25 percent of all nonfarm employees were employed in manufacturing. Even before the recession, the share had fallen to just above 10 percent; now it's about 9 percent. The national trends hold true in the Fifth District. In both North and South Carolina, the share of manufacturing employment has declined from about one quarter of total employment to about 12 percent in just the past 20 years. Manufacturing is a smaller part of



Employment Declines by Industry, 1990-2011



NOTES: Data are through the third quarter of 2011. Textiles includes Textile Mills (NAICS code 313) and Textile Product Mills (NAICS code 314).
 SOURCES: Bureau of Labor Statistics, Haver Analytics; *Region Focus* calculations

the economy in Maryland, Virginia, and West Virginia than in the Carolinas, but in those states the employment share also has fallen by more than half. Although manufacturing employment has increased more quickly than overall employment since the economy began adding jobs in 2010 — in South Carolina, for example, manufacturing jobs have risen steadily for more than a year — it is still well below prerecession levels, and this relatively rapid growth is more likely a temporary bounce than a long-term trend, Kaglic says.

Employment has declined across nearly all industries, but the losses are most pronounced in industries such as apparel, furniture, and electronics, which face heavy competition from other — primarily developing — countries (see chart). In these “China surge” industries, so named by economist Thomas Holmes of the University of Minnesota, employment declined by as much as 97 percent between 1997 and 2007. In the apparel industry, for example, the import penetration rate climbed from 50 percent to 73 percent between 1999 and 2007. Over the same period, apparel and textiles (which supplies U.S. apparel makers) accounted for 40 percent of the total reduction in manufacturing employment, according to the Congressional Budget Office.

A regional shift also has occurred in U.S. manufacturing, as industries have migrated from the Northeast and Midwest to the South in search of lower-cost labor. Textiles departed New England in the 1950s, and foreign automakers have located their U.S. facilities in the South, including BMW in Spartanburg, S.C. By the late 1990s, more than 20 percent of all large manufacturing plants, defined as employing more than 1,000 employees, were located in just seven Southern states, even though those states had less than 15 percent of the country’s population. Recently, South Carolina and its neighbors have become home to a burgeoning aerospace industry, as evidenced by Boeing’s recent decision to open its 787 Dreamliner facility in Charleston, rather than in its home state of Washington.

It hasn’t been all gains. Many of the same industries that moved South in search of lower cost labor have now moved

overseas in search of even cheaper labor, and the high concentration of manufacturing in the South has made the region more vulnerable to downturns. (See “District Digest” in this issue, page 48.) New industries offer hope for the future — Boeing estimates it will hire 4,000 workers — but the loss of tens of thousands of jobs in labor-intensive industries is difficult for states such as North and South Carolina to absorb.

Short-Term Pain, Long-Term Gain

These changes in the U.S. manufacturing sector have been driven primarily by two factors: globalization and rising productivity. During the past several decades, the expansion of world trade agreements, the development of container shipping, and new high-speed communications

networks have opened up the world to a remarkable degree. Between 1996 and 2006, the volume of world trade increased twice as fast as world GDP. Multinational enterprises have set up “global value chains” to produce and sell all over the world, and consumers have access to an ever-increasing array of international goods.

While job loss might be the most salient effect of freer trade for many Americans, those losses are a relatively small portion of the overall churn in the economy. Over the period 1979-1999, about 310,000 manufacturing jobs per year were lost due to import competition, according to economist Lori Kletzer of Colby College and the University of California, Santa Cruz. But this number represents only about 2 percent of the 15 million jobs lost each year in the economy overall, as calculated by Fed Chairman Ben Bernanke. In addition, unemployment generally trended downward throughout the 1980s, 1990s, and 2000s, even as import competition increased, which suggests that globalization has not had a detrimental effect on overall employment.

While the net effect on employment might not be significant, the costs are much more concentrated in some communities than in others. A recent study of local U.S. labor markets that are highly exposed to import competition, particularly from China, found that those communities have higher unemployment rates, lower wages in nonmanufacturing jobs, lower employment-to-population ratios, and receive more federal transfer benefits such as disability and income assistance payments. The study was conducted by economists David Autor of the Massachusetts Institute of Technology, David Dorn of the Centro de Estudios Monetarios y Financieros (Madrid), and Gordon Hanson of the University of California, San Diego.

Generally, though, it is believed that the gains from trade to the economy as a whole outweigh the concentrated costs. The increase in trade since World War II has increased U.S. annual incomes by an estimated \$10,000 per household, according to research by Scott Bradford of Brigham Young University and Paul Grieco and Gary Hufbauer of the

Peterson Institute for International Economics. These benefits stem from several sources. A country can earn and consume more if it specializes in producing those goods in which it has a comparative advantage, and then trades with other countries. Trade also gives firms access to new markets, which creates economies of scale by giving firms access to new and larger markets over which to spread fixed costs.

Trade also enables technological spillovers among firms and countries — for example, the “just-in-time” production processes developed by Japanese automakers have been embraced by U.S. manufacturers. In addition, jobs are created in export industries and through foreign direct investment, such as when foreign firms open new plants domestically. Import competition also lowers the prices of

A Skilled Labor Shortage

“People are our biggest challenge,” says Rick Louthan, vice president of operations for Brenco, a railroad car bearings manufacturer in Petersburg, Va. “As amazing as that sounds with unemployment so high, we are struggling to find people.” Since the company started hiring again at the beginning of 2010, they’ve had 1,000 applicants per month, but hired only about 2 percent of them, according to Cathee Andrews, Brenco’s director of human resources. Brenco requires its workers to pass basic math and reading proficiency tests, and they must be able to use a computer. That’s a change from the past, and it means that some positions go unfilled for longer than the company would like. “We’ve really raised our skill requirements,” Andrews says. “People have to be able to meet a different standard. And unfortunately, a lot of them don’t.”

It’s a challenge reported by manufacturers nationwide. As of March 2011, there were only 1.2 hires per job opening in manufacturing, compared to 2.5 during the recession, according to the industry research group Manufacturers’ Alliance for Productivity and Innovation (MAPI). Usually, the number of hires per opening increases during recessions, when there are a lot of workers available, and falls when the labor market gets tight. Currently, the number has fallen even though unemployment remains high. (The number of hires exceeds the number of openings because not all openings are captured by the Bureau of Labor Statistics data, and because some companies hire without posting a job.) Nearly half of manufacturers in a survey conducted by Deloitte and The Manufacturing Institute reported that they faced a “serious shortage” of skilled production workers, such as machinists, technicians, and craft workers. Welders are in especially high demand; the American Welding Institute estimates that there will be 400,000 vacant positions by 2014.

The shortage exists despite the fact that the unemployment rate for former manufacturing workers is nearly 10 percent. But that statistic masks significant

differences among industries; the unemployment rate for chemical workers is only 6 percent, for example, while workers who used to make wood products have a 14.4 percent unemployment rate. Workers who lost their jobs were disproportionately low-skilled, or have skills that don’t transfer from industry to another. A former sawmill worker might not be able to find work in a chemical factory.

The nation’s community college system has become a focus for policymakers concerned about retraining people who have lost their jobs and educating the next generation of high-skilled workers. In 2010, the Obama administration announced the “Skills for America’s Future” initiative, aimed at developing new training programs and creating a national credentialing system for manufacturing. In September, the Departments of Labor and Education awarded \$500 million in grants to community colleges as part of a new career training program. One of the recipients was Anne Arundel Community College, in Maryland, which received \$20 million to lead a 10-college consortium in developing new certificate programs in the STEM fields (science, technology, engineering, and mathematics).

At the same time, community colleges nationwide are facing budget cuts, which can make it difficult to offer the right kind of training. “In order to train people for skilled jobs, it takes equipment. And it’s simply not cheap,” says John Enamait, dean of the School of Business, Industry, and Technology at Catawba Valley Community College (CVCC) in Hickory, N.C. Through a private-sector grant,

CVCC offers an eight-month “mechatronics” class to train workers on computer-operated design and machining tools. The school hoped to turn the class into a full curriculum program, but needed to purchase an additional \$600,000 worth of equipment, and the funding from the state was pulled. Still, CVCC is doing its best to prepare students for the jobs of the future. “We had a state champion welder last year,” Enamait says. — JESSIE ROMERO



Instructor Mickey Tedder trains Machining Technology students at Catawba Valley Community College on a five-axis milling machine.

consumer goods, and raises domestic productivity as firms must become more efficient in order to stay competitive.

Like trade, higher productivity involves a trade-off between the costs to the workers who lose their jobs and the benefits to society of new ideas and new technologies, which help drive a country's long-term growth. That trade-off is apparent in manufacturing, where productivity has grown much more rapidly than in the economy as a whole. Between 1997 and 2007, for example, labor productivity growth in manufacturing averaged 4.1 percent per year, compared to 2.7 percent for all nonfarm business, according to the Bureau of Labor Statistics (BLS). A significant source of this increase has been new computer-aided tools, which have automated many stages of the manufacturing process. First patented in the 1950s, "computer numeric controlled" machines, which are run by computers instead of a person, have become ubiquitous in manufacturing. At Brenco, a manufacturer of railroad car bearings in Petersburg, Va., such machines now perform many of the tasks that people used to. "The foundation our company was built on was bodies — real strong manual labor," says Rick Louthan, Brenco's vice president of operations. "But automation has become a lot more important in what we do here. You have to remain competitive, and the way to do that is to decrease the labor content."

How Healthy is Manufacturing?

Manufacturing's productivity gains might not be all that they appear, however. "Those statistics aren't representative of all manufacturing," says Susan Houseman, an economist at the W.E. Upjohn Institute for Employment Research. Computer and electronics manufacturing, which accounts for only about 10 percent of the sector, is responsible for a large share of recent output and productivity growth, according to research by Houseman with economists at the Federal Reserve Board. This is because the rapid advancements in the quality of computer products, particularly semiconductors, are represented as price decreases by federal statistical agencies, and price decreases appear as value added and productivity growth in the national statistics. Although most stages of computer manufacturing have moved offshore, the technology has improved so rapidly that the industry still influences the statistics of the sector as a whole. "Once we take out the computer sector, and look at everything else in manufacturing, it doesn't look that great. Productivity growth is not that high, and output growth is pretty weak," Houseman says.

Between 1997 and 2007, productivity in computers increased 6.8 percent per year, compared to only 0.7 percent for the rest of manufacturing. Excluding the computer industry, productivity growth was 47 percent lower, and value-added growth was 69 percent lower.

An additional factor potentially inflating measurements of productivity and value-added growth is the increased use of intermediate goods that are imported from overseas, such as wafers used to make semiconductors or components of a

car's steering column. Between 1997 and 2007, the share of such goods imported from foreign suppliers, primarily in developing countries, rose from less than 17 percent to more than 25 percent. Because the decline in input prices associated with these shifts to lower-cost producers is not fully captured by the federal statistical agencies, it appears in the data that manufacturers are simply producing more goods with fewer inputs, which then are counted as productivity gains. Correcting for these price declines, Houseman and her colleagues find that manufacturing productivity would be between 6 percent and 14 percent lower, and value-added growth would be 7 percent to 18 percent lower.

These numbers could explain why wage gains for many workers largely haven't kept pace with productivity growth over the past decade. In theory, as workers become more productive, they become more valuable to their employers, and their wages increase. But if measured productivity gains reflect changes in the supply chain rather than improvements in domestic technology, the gains might not translate into higher wages for workers on the manufacturing floor.

In the durable goods sector, wages for production and nonsupervisory workers grew only 0.2 percent from 1990 to 2008, even though measured productivity about doubled over the same period, according to BLS data.

Another issue is that offshore manufacturing might have unforeseen implications for the economy as a whole. In addition to importing a growing number of intermediate inputs, many U.S. firms have shifted most of their production processes overseas, while keeping product design and R&D at home. For example, computer manufacturers began outsourcing circuit board production to South Korea, Taiwan, and China in the 1980s. This strategy generated tremendous cost savings, but also unintended consequences; over time, foreign firms began taking over engineering, design, and final assembly.

The fact that computers aren't manufactured in the United States is not a problem in and of itself, but such offshoring might be leading to the erosion of the country's "industrial commons," according to Harvard University business professors Gary Pisano and Willy Shih. The industrial commons is the network of manufacturers, suppliers, and researchers who feed off each other's knowledge and capabilities; Pisano and Shih argue that when pieces of the network disappear, future innovative capacity might disappear as well.

For example, the solar-panel industry is mostly based in Asia now, because it grew out of the semiconductor industry, which is increasingly moving offshore. Lithium-ion battery production is an industry with tremendous growth potential; the batteries power laptops, cellphones, and iPods, and are the highest value-added component of electric cars such as the Chevrolet Volt. Most lithium-ion batteries are made in Asia because the manufacturers developed there to serve the computer and electronics manufacturing industries, which are no longer present in the United States. Although the federal government recently provided \$2.5 billion in

stimulus dollars to a nascent battery industry, it might be too late for U.S. manufacturers to catch up.

As Gary Gereffi, director of the Center on Globalization, Governance, and Competitiveness at Duke University, says, “Global outsourcing hasn’t stopped where we wanted it to stop. Things like product design, R&D, marketing, logistics — these things tend to follow manufacturing pretty closely because you can build real economies of scale and scope. Other countries have rebundled the entire value chain in their economies.”

The Massachusetts Institute of Technology recently launched a task force on “Production in the Innovation Economy” to study the connection between manufacturing and innovation, and the implications for the U.S. economy. “There are emerging industries and technologies, like energy, batteries, and biotech, where innovation and R&D seem much more closely tied to production capabilities,” says professor Suzanne Berger, co-chair of the task force. “As these new technologies come online, can we keep innovation in this country? How do we preserve and sustain those innovative capabilities?”

The link between production and innovation is difficult to establish with certainty, however. Some of the most successful American companies of the past 25 years have focused on R&D and design, leaving the manufacturing to overseas suppliers, and “it’s possible that model could serve us well in the future,” Berger says. “These are questions we need to ask and examine in a systematic way.” Concerns about the loss of the United States’ industrial commons might be premature. Although developing countries have made tremendous technological gains, they have not yet caught up to the sophistication of the U.S. manufacturing sector. And while there aren’t significant data on the phenomenon, there is anecdotal evidence that U.S. companies, including General Electric, Caterpillar, and NCR, are bringing production facilities back into the country, citing concerns about rising labor costs overseas, intellectual property theft, quality control, and proximity to their customers and engineers.

Building for the Future

Barring unforeseen changes, manufacturing employment in the United States is unlikely to ever return to its peak. But that doesn’t mean that manufacturing doesn’t play an important role in the economy. “I wouldn’t look to manufacturing to be much of a job creator in the future,” says MAPI’s Meckstroth. “But there’s a lot of spinoff — it creates jobs in other sectors of the economy.” That’s because manufacturing has a large “backward multiplier”: Many different industries play a role before a final good is produced. For every Boeing that locates in a city, suppliers such as TIGHitco follow, and those suppliers need accountants and landscapers and truckers.

Moreover, manufacturing might be the centerpiece of an industrial commons that provides a platform for the development of future products. “There are a tremendous amount of learning and innovation opportunities that spin off of being able to make things,” says Gereffi of Duke University.

If there is a link between production and innovation, enacting policies that attempt to undo the changes caused by globalization and automation are unlikely to be successful at preserving that connection. Instead, a better course for policymakers is to focus on creating an environment conducive to business and innovation, for example by creating a stable fiscal environment, providing sound infrastructure, and supporting basic scientific research.

In addition, many firms report that finding skilled workers is their biggest challenge. The government is the primary provider of education in the United States, but that education often doesn’t provide the skills workers need to participate in advanced manufacturing. “We need to address the whole education system,” says Meckstroth. “We need more machinists and welders, and we need more engineers.” While such strategies aren’t likely to bring jobs back from overseas, they could help to create new ones — and ensure that the tremendous gains from trade and rising productivity continue to accrue to the U.S. economy. **RF**

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Would a **LITTLE** Inflation Produce a **BIGGER** Recovery?

Why some economists actually want the Fed to push prices higher — and what it might cost the economy

BY RENEE HALTOM

The economic recovery has been disappointing, to say the least. The economy has failed to produce the typical post-recession burst of growth that helps make up for lost output and gets laid-off individuals back to work, leaving production and employment far below trend. More than 13 million Americans remain out of work two and a half years after the recession's end.

These sluggish conditions persist despite the Fed's unusual efforts to speed the recovery. The Fed pushed its interest rates as low as they can go, the so-called zero bound, three years ago. Then the Fed suggested it would keep rates low as far as the eye can see, pumped well over \$1 trillion of liquidity into the economy, and sought to push down longer-term lending rates by "twisting" the yield curve.

Given the Fed's influence over the economy, it is natural to hope the Fed could do still more to nourish the recovery. Some economists have recently offered a proposal that would have been viewed unfavorably just a few decades ago when spiraling prices were wreaking havoc with the economy: purposely generating higher inflation. Everyone knows that low interest rates make borrowing cheaper, but what actually spurs economic activity is the *real* interest rate: the nominal rate minus the expected rate of inflation. When the Fed can't lower nominal rates any further, in theory it can try to create the same effect by raising expected inflation.

While a lively debate on this idea has emerged, the economics profession as a whole is far from sold on the idea in today's context. It is not clear that easier monetary policy — designed to stoke inflation — could improve the current employment slump. The potential costs of higher inflation are more apparent: It could damage the Fed's credibility and make it harder for people to plan for the future, both of which hinder employment and economic growth.

Committing to be Irresponsible

The idea that inflation could be helpful would seem to be an about-face in central banking. The last 30 years of economic research has led economists to generally conclude that fighting inflation should be the central bank's number-one priority. Focusing on price stability turns out to be the most direct way that monetary policy can contribute to the economy's ability to produce jobs, the other side of the Fed's "dual mandate" for monetary policy. Since the early 1980s, the Fed generally has sought to stimulate employment with expansionary policies only when inflation has been in check. The Fed targets inflation that runs 2 percent annually over time, low enough to avoid the major costs of inflation, but comfortably above a state of deflation. For the past

several years, inflation has been coming in near or slightly below that target, though it edged higher in 2011 (see chart).

But some economic models suggest that at the zero bound, inflation can act as a defibrillator to an economy whose growth seems to have flatlined. According to this theory, the central bank needs to create the temporary spike in inflation expectations that pushes real interest rates negative. That's easier said than done. Everyone knows that once the economy starts churning, higher inflation will no longer be what the central bank wants; it has an incentive to renege on the promise once it gets the economic jumpstart it was craving. People can see that coming, so it's not a given that the central bank can raise inflation expectations in the first place. Instead, the central bank must "credibly promise to be irresponsible" in the future, Princeton University economist Paul Krugman wrote in 1998. That is, people must believe it will follow through in inflating tomorrow even if it is no longer optimal at that point.

Some economists have argued that central banks' normal inflation targets are too forgiving to accomplish that. For many central banks, there are no obvious repercussions to missing the inflation target year after year, so an inflation target may not be enough to convince the public that inflation is coming. What the central bank should do is publicly commit to "catching up" on its major inflation misses, argued Gauti Eggertsson at the New York Fed and Michael Woodford of Columbia University in a seminal 2003 paper.

Eggertsson and Woodford show that "price-level targeting" can do the trick. That's when the central bank focuses on the level of average prices rather than its rate of change for a short period of time, just long enough to get the price level back on the path it would have been on without a bad recession. If the average basket of goods costs \$100 in one year, a typical inflation target of 2 percent would see the price grow to \$102 the next year and roughly \$104 the year after that. Under price-level targeting, if inflation comes in too low — say the basket costs only \$101 after the first year — the central bank would create "catch-up" inflation to get the basket to cost \$104 the second year, as targeted. The central bank wouldn't want to fail on that objective for fear of jeopardizing its credibility.

Many economists who want to see the Fed adopt price-level targeting today point out that Fed Chairman Ben Bernanke was once on board with the idea: In 2003, he advised Japan, then in the throes of its "lost decade" of economic stagnation, to adopt the strategy. Japan's main problem, however, was deflation, a problem that the United States does not currently have. In a deflationary economy,

nominal interest rates could be at rock bottom, but if prices are expected to fall, then the real interest rate is actually *higher* (because low nominal rates minus a negative inflation rate equals higher real interest rates). That encourages saving and discourages borrowing and investment, a situation some economists call a “liquidity trap.”

We are not in a deflationary quagmire today, but what we have in common with Japan circa 2003 is an anemic recovery in most forecasts. That leaves the economy producing only slow improvements in unemployment for the foreseeable future. The appealing aspect of price-level targeting is that it could, in theory, help speed growth to close that gap.

Would Inflation Bring Jobs?

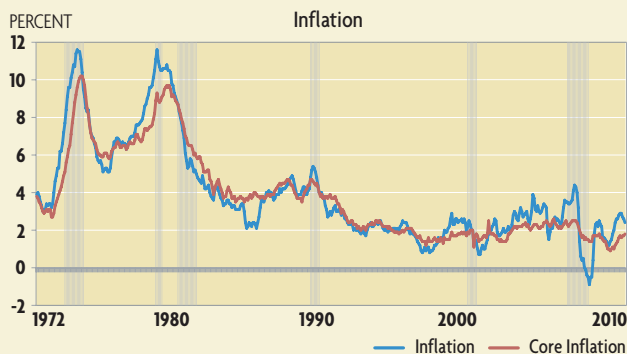
It’s not a given that catch-up inflation would translate to catch-up employment, however. That depends on why the labor market has remained so weak — one of the top questions dividing economists today.

There are reasons to believe that the economy’s ability to produce jobs has deteriorated, such that the economy is not operating as far below its potential as people might think. The economy is producing fewer jobs for the same amount of output: Firms have learned to produce with fewer employees, and temporary workers have been tapped as a lower-risk option for employers in an uncertain economy. The “long-term unemployed” — there are 5.6 million of them, more than two-fifths of the total pool of unemployed people — find it harder to get a job the longer they are out of the workforce. This might be because their skills erode, they are perceived as less valuable, or they lose the networks that might otherwise help them find new jobs. Another explanation is that people who are likely to become long-term unemployed are individuals who had lower chances of finding a job in the first place, a point argued by Andreas Hornstein and Thomas Lubik in an essay appearing in the Richmond Fed’s 2010 *Annual Report*. Many economists and business leaders also argue that a “skill mismatch” was left behind by downsizing industries such as construction and real estate. Thousands of people compete for lower-skilled job offerings, while “[i]f we set up a new site to hire 100 software or storage or networking engineers, we have to go find them one at a time and seek them out and convince them and cajole them to work for us,” Dell Chairman and CEO Michael Dell told *Fortune* magazine in October 2011.

Even if inflation could temporarily jolt aggregate demand, it can’t retrain workers, change production technology, or match people to the right jobs. It also can’t reduce uncertainty caused by fiscal and regulatory policies that may be holding back hiring: For example, households and firms may be putting off purchases as they wait to see whether the growing federal debt will be addressed through tax increases, and as policymakers determine how to implement regulatory changes in financial markets and health care. (See “Why Aren’t We Creating More Jobs?,” *Region Focus*, Third Quarter 2011.) To the extent that the labor market is weak for these “structural” reasons, catch-up inflation would

How Is the Fed Doing on Its Mandate?

Onlookers often gauge the Fed’s success in its “dual mandate” for monetary policy — price stability and maximum sustainable employment — according to common benchmarks. In recent years, the Fed has been assumed to target 2 percent inflation (it made the target explicit in 2012), while unemployment is often compared to estimates of its “natural” rate, a highly uncertain benchmark. The Congressional Budget Office currently estimates a natural rate of 5.5 percent, but many economists argue the natural rate is actually much higher due to structural factors following the recession.



NOTES: Inflation measured as year-over-year percent changes in the monthly Personal Consumption Expenditures price index. Grey bars denote recessions. Data through 2011 end.

SOURCES: Bureau of Economic Analysis, National Bureau of Economic Research



NOTES: Data are quarterly. Grey bars denote recessions. Data through 2011 end.

SOURCES: Bureau of Labor Statistics, Congressional Budget Office, National Bureau of Economic Research

result in only that: inflation, with little improvement in growth or employment.

Structural factors are inherently difficult to quantify, however, and to some onlookers that makes them less convincing as a reason not to try more. “It is hard to believe that an additional 7 million Americans have suddenly lost the necessary skills to work in today’s economy,” Chicago Fed President Charles Evans said in a September 2011 speech. If his view is right, further easing might be effective. Consequently, he argued the Fed should be willing to miss its inflation target on the upside as well as the downside. “I do not see our 2 percent goal as a cap on inflation. Rather, it is a goal for the average rate of inflation over some period of time.” He would prefer to continue easing so long as inflation doesn’t rise above a threshold of 3 percent.

Ultimately, it is likely that both structural and cyclical factors are contributing to high unemployment, but no one precisely knows their relative importance. That makes the hoped-for benefits of higher inflation more uncertain.

Spending Credibility or Overdrawing the Account?

The main risk of raising inflation temporarily is that it could make inflation harder to contain in the future. That could

happen through the erosion of the Fed's credibility, which keeps inflation expectations anchored. Without it, expected inflation becomes in part a self-fulfilling prophecy: Rising prices get written into wage and other contracts, and constraining price pressures requires more drastic monetary tightening from the Fed.

It is possible that the Fed's credibility could start to unravel with a single inflationary move. The public knows from history that inflation is a slippery slope, as former Fed chairman Paul Volcker has observed. "[T]he danger is that if, in desperation, we turn to deliberately seeking inflation to solve real-world problems ... we would soon find that a little inflation doesn't work. Then the instinct will be to do a little more — a seemingly temporary and 'reasonable' 4 percent becomes 5, then 6 and so on," Volcker wrote in a September 2011 *New York Times* op-ed.

Volcker is widely credited with starting the Fed on the road to the credibility that today helps keep inflation expectations contained. He kept interest rates persistently high in the late 1970s and early 1980s, even as unemployment rose above 10 percent, to give markets reason to believe the Fed would follow through on its inflation objective. Markets have rarely doubted the Fed's commitment to low inflation since.

Supporters of price-level targeting say that such a policy would guide long-run inflation expectations by committing to an average rate of inflation (even while permitting short-term wings). In principle, that could allow consumers and businesses to make a pretty good guess about where average prices will be 20 years from now and aid them in making investment decisions. But a potential problem with adopting a price-level target expressly to make up for recessionary losses is the guesswork that the supposedly one-time move would create for the future. "You could say it's a one-time thing for all time, but the rationale would be more complicated," says John Taylor at Stanford University. The question becomes whether the adoption of a new regime is really believed to be a permanent shift in the approach to policy, or if instead people see it just as a way to get the current benefits of more inflation without credibly tying policymakers' hands in the future. Financial markets would have to forever guess when the Fed will deem economic conditions bad enough to warrant a similar move, a task that has already been made more difficult by the Fed's "rapidly changing tactics" of the last few years, in the words of St. Louis Fed President James Bullard.

Advocates of temporarily higher inflation, however, say that credibility is like a currency that allows the central bank to take policy risks in unusual situations. "These are times when the central banks need to spend some of the credibility that they accumulate in normal times," Harvard University economist Kenneth Rogoff argued in a syndicated op-ed. But no one knows how quickly the Fed's credibility could be cashed out. "Would the public really believe that the central bank is willing to push interest rates sky high and kill growth in order to contain inflation, after it abandoned its earlier inflation target in order to foster

growth?" University of Chicago's Raghuram Rajan wrote in a separate syndicated column. With less credibility, the Fed might have to take greater contractionary steps in the future to stymie inflation. That's why temporarily higher inflation would eventually create more unemployment and instability, not less, argued Philadelphia Fed President Charles Plosser in a November 2011 speech.

Another problem is that inflation hurts lenders at the expense of borrowers. To some economists, that is precisely the point. Recoveries following financial crises are especially slow and painful as households, businesses, and governments struggle to repair their over-leveraged balance sheets. "[T]here is no quick escape without a scheme to transfer wealth from creditors to debtors, either through defaults, financial repression, or inflation," Rogoff argued. But through inflation, the Fed would effectively be picking winners and losers of bad debts. Chicago's Rajan has written that the losers would include retirees on fixed incomes, pension funds, already-tapped state and local governments, and insurance companies, many whom purchased mortgage-backed debt during the boom, as well as households with variable-rate mortgages. In addition to being a bad way to address the debt problem, Plosser argued in his speech, the Fed ought to leave distributional policies to the democratic process of fiscal policy, or risk jeopardizing its independence as a consequence.

New Support for an NGDP Target

Rather than juggling both inflation and employment, some economists argue that the Fed should focus on a single variable: total spending in the economy, or nominal gross domestic product (NGDP). NGDP is everything that is produced times the current prices people pay for it. It is similar to "real" GDP, the measure of economic growth reported in the news, except NGDP isn't adjusted for inflation. One appeal is that growth in NGDP is the sum of exactly two things: inflation and the growth rate of real GDP (the amount of actual goods and services produced). Thus, it captures both sides of the Fed's mandate in a single variable.

Bennett McCallum, a professor at Carnegie Mellon University and a visiting scholar at the Richmond Fed, was one of the leading advocates of the idea of an NGDP target in the early 1980s. The traditional argument for it is that the Fed has greater control over total spending — which is linked tightly to the money supply — than either of its components, inflation and economic growth. In the long run, the Fed has full control over inflation, but in the short run its control is limited because prices don't adjust instantaneously to a change in the money supply — as economists would say, prices are "sticky."

To influence the economy, the Fed has to make an educated guess about how its changes to the money supply will break down between inflation and unemployment in the short run, also known as the Philips curve trade-off. The trouble is, that relationship is not well understood,

McCallum says. “I don’t think anybody can contest this: That relationship is the portion of any macro-econometric model that is most poorly understood and for which the results are most suspect.”

His idea was to get the Fed out of the business of managing real aggregate demand in the short run — how much emphasis it gives to employment relative to inflation — while achieving both targets in the long run. In the long run, the real economy has tended to grow at roughly 3 percent due to its inherent characteristics, virtually regardless of what policymakers have done. If that trend continues, an NGDP growth target of, say, 5 percent would tend to result in that 3 percent real growth rate over time and 2 percent inflation, roughly the Fed’s target. But in the short run, the Fed would let markets sort out how much NGDP growth comes from inflation and how much from economic growth. It’s not that central bankers should be indifferent between the two, McCallum says, “it’s that we know we can’t control it.”

Though NGDP targeting is not intended to create higher inflation, that is one possible outcome in the short run. This has made NGDP targeting an attractive prospect for those who already want inflation. A version recently advocated by Christina Romer of the University of California, Berkeley, formerly chair of the Council of Economic Advisers under President Obama, would even have the Fed target “catch-up” NGDP growth, similar in concept to a price-level target, making inflation an even more likely outcome in the near term.

NGDP targeting would be a more palatable way to “state a strategy that’s ultimately about something else,” Princeton’s Krugman wrote, favorably, on his blog. People balk at the prospect of inflation, but say you want to keep total spending in the economy on track, “and you’ve found a more acceptable way to justify huge quantitative easing and a de facto higher inflation target.” It’s not a deception, he wrote, but a communication strategy: If you’re of the camp that inflation will improve employment and avoid another depression, a policy billed as keeping national income on track is a more accurate description than simply “inflation.”

McCallum supports an NGDP target under his original logic rather than on the basis of its potential short-term benefits to an ailing economy. “The way I think about policy rules is that you adopt them because you think they’re going to do well on average over a long span of time,” he says, not because they suit the temporary conditions you happen to be in. NGDP targeting has received a recent burst of sup-

port for both sets of reasons, mostly through economics blogs and op-eds, but it is completely untested in the real world. No central bank is known to have explicitly tried it, even though NGDP is one of many indicators that the Fed and other central banks use as a barometer of economic conditions. A lot of unanswered questions remain about how it could be implemented and if it would really produce better economic outcomes in the long run than what the Fed does at present.

Changing the Rules

The Fed’s policymaking committee discussed NGDP targeting at its November 2011 meeting and provided a hint that major changes are not on the table. “We are not contemplating at this time any radical change in framework,” Chairman Bernanke said after the meeting. “We are going to stay within the dual mandate approach that we’ve been using until this point.”

Central bankers don’t take changes to the conduct of policy lightly. All central banks face the temptation to boost growth for temporary gain at the expense of longer-run price stability. To convince the public that monetary policy won’t give in to that temptation — to therefore maintain credibility and keep inflation anchored — many central banks stick to consistent “rules,” either explicit or implicit, to effectively tie their own hands. The best example is the “Taylor Rule,” devised by Stanford’s Taylor, which indicates how interest rates should be adjusted in response to how output and inflation are performing, and which has influenced the Fed’s policymaking discussions during the past 20 years.

But when should the policy rule change? History has shown that central bankers tend to wait until an idea is thoroughly tested in theory and, if possible, in practice by other central banks before trying them out for themselves. In the dominant theories of monetary policy, central banks can use abrupt changes to the policy rule to surprise the public and engineer a fleeting boost to economic activity. But there is the risk that an actual shift in procedure would be perceived by the public as an abandonment of the central bank’s longer-term objectives, thereby compromising both price stability and employment. The choices are made more difficult — and potentially more tempting — by the fact that many of the costs to changing procedure aren’t apparent until the future. As McCallum puts it, “The central bank is the one institution our country has that can take a somewhat longer-term view of things.” **RF**

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The system designed to protect and promote innovation could be slowing it down

BY TIM SABLİK

Mr. Watson, come here, I want to see you.” When Alexander Graham Bell spoke those words to his assistant Thomas Watson through the first working telephone prototype, he had a good sense of the enormous world-changing potential housed within his invention. But it is unlikely that he could have conceived in 1876 of how the phone industry would evolve in the 135 years following his receipt of U.S. patent number 174,465 for the device.

Patents, like those granted to Bell for his inventions, were designed to provide incentives to innovators while making their findings available to others. The incentive comes in the form of temporary monopoly power, the exclusive right of the original innovators to market their product without competition for a limited period of time — 20 years in the United States. In exchange, the inventors have to disclose their invention to the public, and after the patent expires, it becomes part of the public domain.

“The old notion of patents was that you had one patent, one product. And the monopoly was understood as a limited trade-off in order to have that product come into existence,” says Michael Heller, a professor at Columbia University Law School who has written about the role of intellectual property (IP) law in the economy.

The trade-off is seen as necessary to promote the development of new ideas. If an inventor like Bell spent considerable time and resources to create new knowledge only to have competitors copy his idea without compensating him for his work, then he would have little incentive to bring new technology to the marketplace. Faced with a limited ability to recoup their investments, inventors might choose to keep their knowledge secret or never explore the invention in the first place. By patenting his invention, Bell allowed other manufacturers to see his work, but if they wanted to use his developments directly, they needed to negotiate with him.

Today’s high-tech products are a far cry from the phones of Bell’s time, or even a few decades ago. This can lead to challenges. For example, mere transmitted conversation has become just one of many features today’s users expect of

their phones, and smartphone developers are not the originators of many of the ideas built into their devices. Digital cameras, GPS, and wireless data connectivity were developed and patented by separate entities, and negotiating access to all of those patents can be difficult.

“For many areas of the economy, such as telecom or biotech, the structure of innovation has shifted radically toward assembly of components of information,” says Heller. “It potentially creates a real roadblock. When you have hundreds or thousands of patents that are needed for a single product, you get no benefit socially from the monopoly power conferred by those patents — all you experience are the costs.”

Those costs are increasingly in the news. In September, Apple obtained an injunction in Germany against the sale of products by one of its competitors, Samsung, claiming that Samsung had infringed upon patents related to its mobile operating system. That same month, Samsung filed suit against Apple in Australia, raising the number of patent lawsuits filed between the two companies to 21.

And Samsung and Apple are only two of nearly two dozen tech companies involved in what many observers have dubbed a “patent war.” The number of mobile-handset-related patent lawsuits has increased by 25 percent every year since 2006.

According to Alex Tabarrok, a professor of economics at George Mason University, companies like Apple don’t expect to make money from all of their patents. Rather, they want to ensure that their innovations are not blocked by another company’s patents. “So they build up a big patent war chest in order to protect themselves from the war chests of other big firms. It’s a sort of mutual assured destruction.”

Many companies have begun stockpiling ammunition in earnest. In August, Google, which develops the Android operating system that Samsung and other mobile device manufacturers use, paid \$12.5 billion to acquire Motorola Mobility and its portfolio of 17,000 patents. It later sold some of those patents to HTC, another manufacturer that uses its operating system, allowing HTC to sue Apple for patent infringement.

Both the number of patents issued and the number of patent lawsuits have increased over the last decade (see charts). What is behind this sudden explosion in litigation? To understand how the patent system may be producing undesirable effects, it is useful to explore two of its most important functions: defining ownership and providing economic incentives for innovation.

Navigating Through the Fences

A coordination problem is playing out now in industries where manufacturers need to assemble hundreds of patents to create a single product. Since patent owners can seek injunctions against manufacturers who violate their patents, as in Apple’s litigation against Samsung, any one patent holder can block the entire device from coming to market. Patent owners can also obtain orders from the International

Trade Commission excluding a product that infringes a patent from being imported into the United States.

“For almost any cellphone, the manufacturer can potentially face a thousand lawsuits at one time, and each one requires \$7 million to defend. It is a very scary prospect for innovators,” says Heller.

Moreover, the threat of mutual assured destruction by countersuit can be empty if the party claiming infringement is a nonpracticing entity (NPE) — that is, a firm that owns patents but does not produce anything. The 2006 U.S. Supreme Court case *eBay v. MercExchange* limited the ability of NPEs to get injunctions, but they can still sue for damages. Indeed, in a review of most-litigated patents between 2000 and 2007, John Allison of the Center for Law, Business, and Economics at the University of Texas, Mark Lemley of Stanford University Law School, and Joshua Walker of the Stanford IP Litigation Clearinghouse found that NPEs were involved in more than half of the suits.

Heller notes that NPEs provide a market in which small-scale inventors can sell or license their work, making their patents more liquid. But because patent holders can seek damages beyond the value of their input, NPEs have an incentive to engage in strategic behavior. He suggests reforming the remedies available in patent litigation. Instead of granting injunctions for patent infringements, he recommends a system that only awards damages, and does so based only on the incremental value of the infringed patent to the product as a whole.

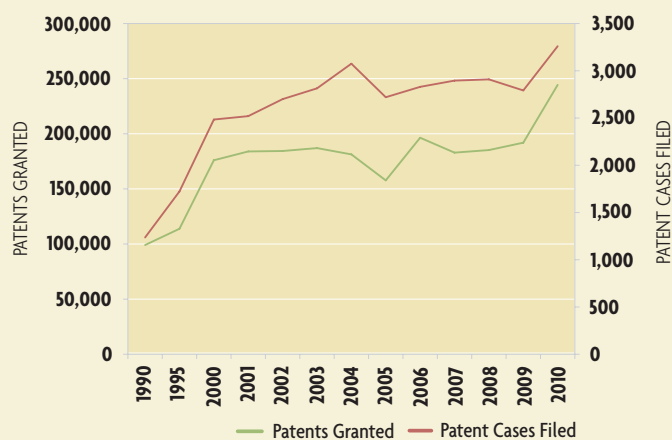
“Then you wouldn’t worry so much about individual patents blocking innovation, because if the patent is some tiny fraction of the value, the damages innovators are exposed to would be congruent with the value of the patent to the whole,” says Heller.

Strategic behavior can also be compounded by poorly marked property boundaries. Tabarrok gives the example of Jerome Lemelson, who filed a patent in 1954 for the concept of machine vision, which involves a camera or receiver scanning an object and processing the information via a computer. This has applications in various robot manufacturing systems, none of which existed when Lemelson filed the patent. Yet due to delays in processing, his patent was not actually granted until 1994, after the robot systems that used machine vision were already developed. When the patent was granted, firms that built the systems were interpreted to be infringers, even though they had no prior knowledge of its existence.

In addition to these so-called submarine patents, Heller adds that patent applicants can adjust their claims during the approval process to cover innovations others have made in the meantime. The shifting and, in the case of submarine patents, the invisible scope of patents creates the sort of challenges that would arise if physical property laws operated the same way.

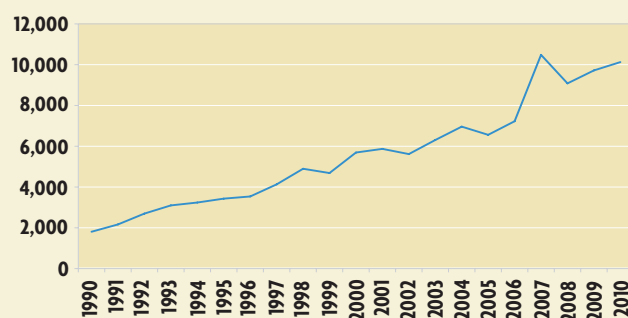
“The idea of a patent is supposed to be like fencing your property,” says Tabarrok. “The problem is that in this case the fences are much farther from where the person actually

U.S. Patent Grants and Litigation



SOURCES: U.S. Patent and Trademark Office: U.S. Patent Statistics, U.S. Courts: Judicial Facts & Figures

Number of Defendants in U.S. Patent Litigation



SOURCE: PACER and Priorsmart litigation database

homesteaded, and sometimes you don’t know exactly where the fence is. Patent law should aspire to create a system of property rights which is as clear as land titling.”

The Costs of Negotiation

Patent rules can also impose costs in the form of locating and negotiating with all individual owners. Imagine if consumers had to haggle over the price of every item when they shopped at the supermarket; shopping would be time-consuming and expensive. In the context of patents, negotiation may require the time of executives and expensive lawyers. Multiply those costs over hundreds of negotiations to assemble the rights for one product, and the costs can quickly escalate.

Defining access to complementary patents in the form of patent pools could be one solution to high negotiation costs. Patent pools typically operate as agreements among several holders of complementary patents to form a consortium that manages these related patents collectively. All member companies have access to all of the patents in the pool. The pool also sells access to nonmembers, the proceeds of which are distributed among the members of the pool according to predetermined rates.

Rudy Santore of the University of Tennessee, Michael

McKee of Appalachian State University, and David Bjornstad of Oak Ridge National Laboratory conducted an experiment to test how effective patent pools were at promoting efficient coordination and pricing. The researchers compared the performance of patent pools with individual patent holders setting separate royalties, setting fixed fees and royalties for access to their patents, or participating in nonbinding communication with other patent holders. They found that patent pools resulted in the most efficient market for IP rights, leading to greater availability of patents for downstream manufacturers.

There are some limitations to patent pools, however. Patent pools could evolve into a trust, whereby competitors collude to exert greater monopoly power over the market than they could individually. Additionally, larger pools could face greater coordination challenges, particularly if participants cannot agree how valuable each patent is to the product as a whole.

Setting the Right Incentives for Innovation

Currently, the incentive innovators receive from patents in the form of monopoly power is relatively uniform, regardless of industry. Some argue that while the current system might be appropriate for some industries, it is excessive for others.

Tabarrok says the pharmaceutical industry is a good example of a form of invention that merits the full measure of protection offered by today's system. "It takes \$1 billion to get that first pill onto the market, and the second pill costs 50 cents once you know the formula. If pharmaceutical companies did not have some protection, they would have much less of an incentive to do the \$1 billion worth of research and development to bring the drug to market."

He suggests using a system that matches rewards with innovation costs. For software and business method innova-

tions, costs are often much lower than in pharmaceuticals. One example is Amazon's patent for its "one-click purchasing" system, which covers computer software that stores a customer's address and payment information to reduce order processing time. The cost of developing the concept of such software is likely not high, says Tabarrok. In industries where innovations occur quickly and require smaller investments to produce, a lesser degree of patent protection is needed to promote innovation. Those industries would benefit from a more flexible system that offered variable patent lengths, Tabarrok argues, such as three- and 10-year patents. In exchange for lessened protection, innovators would be subject to lower filing and maintenance fees, encouraging creators of low-cost innovations to seek less protection, since they need fewer incentives to recoup their investments. In fact, in an open letter on the topic of its one-click patent, Amazon's CEO, Jeff Bezos, argued in favor of a similar system as a way to reduce coordination gridlock in the tech industry.

Carl Shapiro, who teaches at the University of California at Berkeley and is currently on leave with the President's Council of Economic Advisers, notes that the economic incentives provided by rewards are not a one-way street, and "excessive rewards, just like inadequate rewards, can reduce efficiency and stifle innovation." Indeed, there are several examples of creative industries that thrive without the protection of patents (see below), suggesting that a one-size-fits-all approach may not always promote the greatest efficiency.

Reforming the PTO

One place to start with reforms to the patent system is the entity that grants the patents: the U.S. Patent and Trademark Office (PTO). Proposals for reform at the PTO

Can Creativity and Copying Coexist?

According to Christopher Sprigman of the University of Virginia School of Law and Kal Raustiala of the University of California, Los Angeles School of Law, not all creative industries require legal protections against copying. They studied the fashion industry, which not only operates in a world of low intellectual property (IP) protection, but depends on it.

While trademarked fashion labels are vigorously protected, the actual designs have no formal legal protection against copying. Yet each season, new outfits fill the store shelves, with stores often exhibiting similar styles by different designers. Why do designers continue to create if their rivals can mimic their work?

Sprigman and Raustiala contend that the fashion industry thrives because of design copying and its ability to provide anchoring and induce obsolescence. Early fashion adopters in society seek to differentiate themselves by wearing the newest designs. At the same time, as a design

becomes more popular, it is increasingly copied. On one hand, this provides an anchor for consumers, simplifying their clothing choices to a few popular designs. But as designs are replicated, they also lose their unique status for early adopters, becoming obsolete in their eyes.

This cycle of anchoring and induced obsolescence provides a catalyst for consumers to buy the newest products — and it is made possible through widespread copying by clothing firms. Not all industries can turn copying into productive fuel like the fashion industry. But Sprigman suggests that as improvements in technology make copying easier (and harder to prevent), some industries could examine whether strong protections against copying are truly beneficial.

"The question is how vulnerable is a business model to people copying," he says. "Copying is not necessarily the death of creativity — sometimes it is actually a spur to creativity."
— TIM SABLIK

are nothing new. Indeed, the office has long had difficulty keeping pace with the demands placed upon it by modern technology. As of December, the average processing time for a new patent was about 34 months, or nearly three years, and there were more than 600,000 patents pending approval. Balancing the dual pressures of examining patent requests thoroughly while also processing them quickly can lead to overly broad or weakly defined patents, contributing to many of the problems discussed above.

Indeed, Stanford's Lemley observes that "the problem is not precisely that the Patent Office issues a large number of bad patents. Rather, it is that the Patent Office issues a small but worrisome number of economically significant bad patents."

Lemley, Allison, and Walker found in their study that less than 2 percent of patents are ever litigated in courts to begin with, and the most-litigated patents share several characteristics that can be identified ahead of time. The vast majority of the most-litigated patents were in the software or communications industries and cited a greater number of prior works in their applications. They were also more likely to be bought by another party in between the time they were issued and the time they appeared in litigation.

Lemley suggests a number of possible reforms to ensure the PTO is better equipped to catch such patents ahead of time. Since applicants often have the best view of a patent's validity, Lemley suggests a system whereby applicants could pay extra fees for a more thorough examination of their application and earn a presumption of validity that would

give them a stronger defense in any litigation. Another option would be to allow for post-grant opposition, where outside parties could request and fund a more thorough examination of a recently issued patent. This would allow the PTO officers to harness the expert information available to practitioners in the field, leading to stronger patent approvals.

In fact, this post-grant review is one of the changes in the America Invents Act on patent reform signed into law in September. The post-grant period extends nine months after the patent is issued, and outside petitioners may challenge the patent on any grounds of invalidity. Other significant reforms in the legislation include provisions to give the PTO greater control over the fees it collects and a change in patent assignment from a first-to-invent system to a first-to-file system. This will bring the United States in line with the way many other countries assign patents, but will it alleviate gridlock at the PTO and among inventors? That remains to be seen.

Patent litigation among high-tech innovators is on the rise. It could be an inevitable result of a world that has grown more complex since the time of Alexander Graham Bell, but many in the tech industries have expressed their frustration with the current state of affairs. Google's patent counsel, Tim Porter, has said that Microsoft created many of its staple software products before ever obtaining a software patent, suggesting that innovation could thrive under a different system. The debate about what that system will look like, however, is certain to continue. **RF**

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RECESSION ON THE EVE *of Retirement*

Losses from the recession will cause some boomers to delay retirement, but many others will actually rush into it

BY RENEE HALTOM

The United States is home to roughly 78 million baby boomers, the generation born between 1946 and 1964. That's almost as many as the populations of California, Texas, and New York combined. Over the next two decades, this massive group will transition into retirement and draw upon the wealth its members accumulated over their working lives.

From that perspective, the boomers were hit with the 2007-2009 recession at arguably the worst possible point. Unlike younger workers, people close to retirement have fewer working years left in which to recoup wealth and income losses. And unlike the already-retired, many were afflicted by job loss and income stagnation in addition to damaged assets.

"I think their retirement plans and expectations are completely clouded with concerns and fears," says Cathy Weatherford, president of the Insured Retirement Institute, a nonprofit sponsored by the annuity industry that provides research and financial education targeted at the older segment of the population. "Over half of the people we talked to said they would be working for income in retirement. So maybe we're going to have to rename retirement."

Indeed, a big dose of pessimism about retirement prospects set in as soon as the economy turned sour. The fraction of 51- to 61-year-olds who said they expected to work past age 65 jumped from 38.6 percent to 46.4 percent in nine months during the recession. It took nine *years* for actual labor force participation to rise that much during the 2000s, according to a 2010 study by Michael Hurd and Susann Rohwedder for the Retirement Research Center at the University of Michigan. News media coverage has reinforced that pessimism, painting a dire picture of the fate of today's near-retirees.

On the surface, this pessimistic view makes sense. People within 10 years of full retirement age are more likely to own houses and financial assets than the population as a whole, so casual observers have understandably assumed that the problems in those markets would wreak havoc on their retirement assets. This view also matches perfectly with the principles that economists have long believed govern

people's saving and investing behavior as they approach retirement. The "lifecycle hypothesis" suggests that people will borrow at certain points in life and save at others in order to enjoy relatively "smooth" consumption overall. A major hit to wealth — such as the \$16 trillion decline in net worth that U.S. households and nonprofits experienced in just two years, according to Fed data — should drive older people to work longer in order to shore up income, savings, and ultimately consumption over the remainder of their lives.

But there are reasons we can expect the Great Recession to have a less severe effect on the average retirement age. Competing influences make for a complex picture of what the recession has done to the retirement prospects of the baby boom generation. While the number of near-retirees who expect to work past age 65 has gone up since the recession, quite a few boomers are somewhat insulated from housing-market and stock-market losses, and job loss has actually led some of them to retire earlier. Thus, for many boomers, their post-65 years may not track the postwar dream of stopping work altogether — hitting the golf course or the beach — but neither are they likely to face a reversion to the experiences of people from still earlier generations, who worked full-time for most of their expected lifespan. Instead, they may well create a new synthesis of the two prior retirement models, one that includes continued participation in the labor force, but less intensely than during their prime working years, combined with more leisure.

Measuring Loss

Boomers weren't as exposed to market swings as is widely assumed. More than half of the average boomer's wealth is held in Social Security and defined-benefit retirement plans (traditional pensions), assets that are virtually recession-proof. Using data from the Fed's Survey of Consumer Finances (SCF), Alicia Munnell, Francesca Golub-Sass, and Dan Muldoon at Boston College's Center for Retirement Research calculated that the average wealth of households approaching retirement was \$676,500 in 2007. About 44 percent of that was held in Social Security and 18 percent in defined-benefit pensions.

A smaller share of wealth was held in categories vulnerable to market swings: 20 percent in housing, and 11 percent in 401(k)s, IRAs, and other financial assets. (Economists argue that the country's massive shift away from defined-benefit plans and into defined-contribution plans since the early 1980s was gradual and recent enough to have limited the exposure of today's near-retirees.) A few smaller categories comprised the rest.

That's one reason the boomers' wealth losses appear small on average. An October 2011 study by Alan Gustman and Nahid Tabatabai at Dartmouth College, and Thomas Steinmeier at Texas Tech University provides an estimate of actual wealth losses from the Health and Retirement Study (HRS), a periodic survey sponsored by the National Institute on Aging. It sampled the same households in both

2006 and 2010 — that is, both before and after the financial crisis and recession. For the average household of “early boomers,” the cohort aged 58 to 63 in 2011, wealth fell by 2.8 percentage points in the four-year period. The researchers judge that to be modest based on the experience of previous generations at the same point in life. (Older cohorts gained 5.4 percentage points in wealth on average, but that was due partly to the housing boom. Thus, more “normal” economic conditions would produce a slight increase in wealth, in the researchers’ view, making the 2.8 percentage-point loss seem relatively modest.)

There’s another key reason average losses appear small: Gains for some groups cancel out losses for others, reflecting the wide divergence in what baby boomers experienced in the recession. The HRS sample was split almost 50/50 on whether households experienced a net gain or a net loss.

Those groups tend to divide by income. The greatest losses — both absolutely and in percentage terms — are concentrated among the wealthy, who tend to hold a greater proportion of wealth in assets that are vulnerable to recessions. In the HRS sample, four out of 10 early boomer households in the lowest 10 percent of wealth experienced some kind of wealth loss, whereas seven out of 10 in the wealthiest 10 percent reported it. The latter group was more than twice as likely to have lost more than half their wealth. The relatively poor, on the other hand, are less likely to own stocks, bonds, a home, or a pension — Social Security comprised almost 80 percent of wealth for the bottom quarter in the HRS sample. They lost just 1 percent of wealth on average.

While difficult to see in the data, there naturally are disparities even among households with similar wealth standings based on how they reacted to the market’s initial losses. Ric Edelman, chairman and CEO of Edelman Financial Services, a financial planning firm based in Fairfax, Va., that serves 15,000 clients, says that people who maintained their behavior through the financial market turmoil — stayed in the market and kept up retirement plan contributions — are the ones who emerged on the other side in better shape than they were in before it. Those who failed to do so tended to be those who lost their jobs or panicked and pulled out of the market when prices were low, missing the recovery that the market has experienced since.

Timing is Everything

The recent recession was a big one, its depth and breadth unmatched since before many baby boomers’ parents were born. But in some ways, its timing worked out favorably for boomers.

Housing is where many of their losses were concentrated. Roughly 80 percent of people within 10 years of retirement age own homes, according to the Census Bureau, compared to 67 percent for the nation as a whole. A potential saving grace, however, is that older people tend to be in a better position to withstand house price declines than younger people. They tend to be better diversified and have less

mortgage debt than younger households, which makes them less likely to be under water on a mortgage. Less than 5 percent of early boomers owe more on their homes than they’re worth, according to the HRS data analyzed by Gustman, Tabatabai, and Steinmeier. The number is many multiples of that for the nation as a whole.

There’s also a somewhat surprising observation to consider: People don’t rely on housing wealth for retirement consumption, contrary to what the lifecycle hypothesis would seem to imply. Instead, they tend to regard home equity as a rainy day fund earmarked for unexpected health expenses, late-life care, or bequests. This result comes from research by Steven Venti at Dartmouth and David Wise at Harvard University.

Perhaps the most important aspect of the housing market’s timing is that “it fed the boomers on the way up,” says Chip Case, a professor emeritus at Wellesley College, known for his research on the housing boom and bust with Yale University economist Robert Shiller. “If you got into the market before 2000, you’ve got a lot of equity,” he says. Even with housing losses, he argues that this equity has left boomers with plenty of flexibility now to take their next step in life: buffering themselves from financial losses, trading down into a smaller house, or moving into a rental or a nursing home. But if what Venti and Wise found holds true, then those steps won’t be necessary for a little while. Their work, and research that has followed, found that households tend not to exit homeownership unless a spouse dies or is moved into a nursing home, and even in those cases it’s rare until much later in life.

A similar argument can be made for equities. More recent research by Venti, Wise, and James Poterba at the Massachusetts Institute of Technology found a similar pattern for financial assets: Withdrawal rates in personal retirement accounts are low until age 70½, when required minimum distributions tend to kick in, and even then withdrawals stay fairly low until age 85. The point is that many households close to retirement may have some years before they’re likely to realize market losses. With luck, markets will recover further in that period.

Is it Unemployment or Retirement?

Wealth losses and the extremely weak labor market have imposed competing forces on people close to retirement. Both could be expected to drive retirement behavior, but in opposite directions, and it’s not obvious which effect should

Wealth losses and the extremely weak labor market have imposed competing forces on people close to retirement. Both could be expected to drive retirement behavior, but in opposite directions.

be most visible at the aggregate level: Unemployment affects a relatively small group in a pretty severe way, while market losses are smaller in magnitude but hit a broader segment of the population.

According to Courtney Coile and Phillip Levine at Wellesley, the effect of the weak labor market will be greater this time around. In an October 2009 study, they predicted 50 percent more early retirements following the Great Recession as a result of the weak labor market than delayed retirements as a result of wealth losses. If their findings were updated to include the stock market's more recent gains, the number would stack up even more heavily in favor of increased retirements today, Coile says.

Coile and Levine used a separate study to put financial market losses in perspective: 75 percent of the households in a sample of near-retirees from the 2007 SCF held less than \$100,000 in equities. But for a household actually holding \$100,000 in stocks, a market decline of a full 50 percent would amount to just \$208 less in monthly retirement income, they estimate. That isn't nothing, they argue, but it's probably not enough to determine when someone will retire. Coile emphasizes that there certainly were people who lost serious sums in the market and were forced to put off retirement — just not on the scale that press reports have implied. “There has been a little bit too much energy in the media relative to the size of the problem,” she says.

By comparison, “the unemployment rate is a really underappreciated force,” she says. The labor market has been particularly unkind to older workers, who used to be less likely to lose their jobs, but have lost some of that edge in part because job tenure is a fading phenomenon in the workplace. They've had much more trouble finding reemployment than younger workers in this recession. Roughly 8 percent of jobless workers under 35 have been out of work for 99 weeks, but 16.3 percent of jobless workers over 45 have been out of work that long, according to a September 2011 analysis by Gerald Mayer at the Congressional Research Service. If older workers are able to find new jobs, they tend to experience sharper median wage declines than their younger counterparts: 20 percent for men aged 50 to 61, and 36 percent for those 62 or older. Men aged 25 to 49 experienced only a 2 percent to 4 percent median wage decline, according to Richard Johnson and Corina Mommaerts at the Urban Institute in Washington, D.C. (Many labor market studies focus on men since a plethora of hard-to-measure cultural changes over time have influenced women's decisions to work outside the home.)

That's why, when the years to retirement can be counted on one hand, getting laid off might be enough encouragement to just jump into it. Economists Gary Burtless and Barry Bosworth, both at the Brookings Institution in Washington, D.C., found little evidence that a weak labor market drives men between 55 and 59 from the labor force, but it does for men above 60, and especially above 65. Perhaps these individuals find job prospects weak and become “discouraged” workers who stop looking altogether.

Or perhaps they welcome the opportunity to enjoy a few extra years of retirement with relative youth and good health.

There's also a third possibility: They may choose to make ends meet by collecting Social Security. Benefits are available at age 62, roughly the threshold Burtless and Bosworth observed, although collecting early comes with a stiff penalty of up to 25 percent of the monthly payout. People who collect between age 62 and their full retirement age — 66 for most boomers, and 67 for younger generations — are subject to an earnings test that determines benefits. Bosworth and Burtless noted an uptick in the share of eligible boomers collecting Social Security at 62 after the financial crisis set in. For at least some of them, doing so was probably a matter of necessity.

Ultimately, early retirements might create a separate problem: People who claim Social Security early have to make do with permanently lower monthly payouts. That's because benefit levels are set so that total lifetime benefits are fixed regardless of how many months and years they're spread over. Coile and Levine found that households which are already less affluent are most likely to resort to early Social Security to make ends meet and experience that lower payout. Someone in the bottom third of the income distribution who became unemployed near retirement would experience lower income in their 70s by \$2,550, or about 25 percent, on average, they found. Since that group is likely to receive the vast majority of their wealth in retirement from Social Security as opposed to investments, the drop is likely to stem mostly from the reduction in Social Security benefits that would presumably result from collecting early, the authors argue. That's a much bigger hit to total income than households in the top third are likely to experience in their 70s due to a recession close to retirement; for them, income losses are likely to be driven largely by investments. Therefore, the effect of the weak labor market on less-wealthy near retirees should be of greater concern than the financial losses of those who are relatively wealthy, Coile and Levine argue.

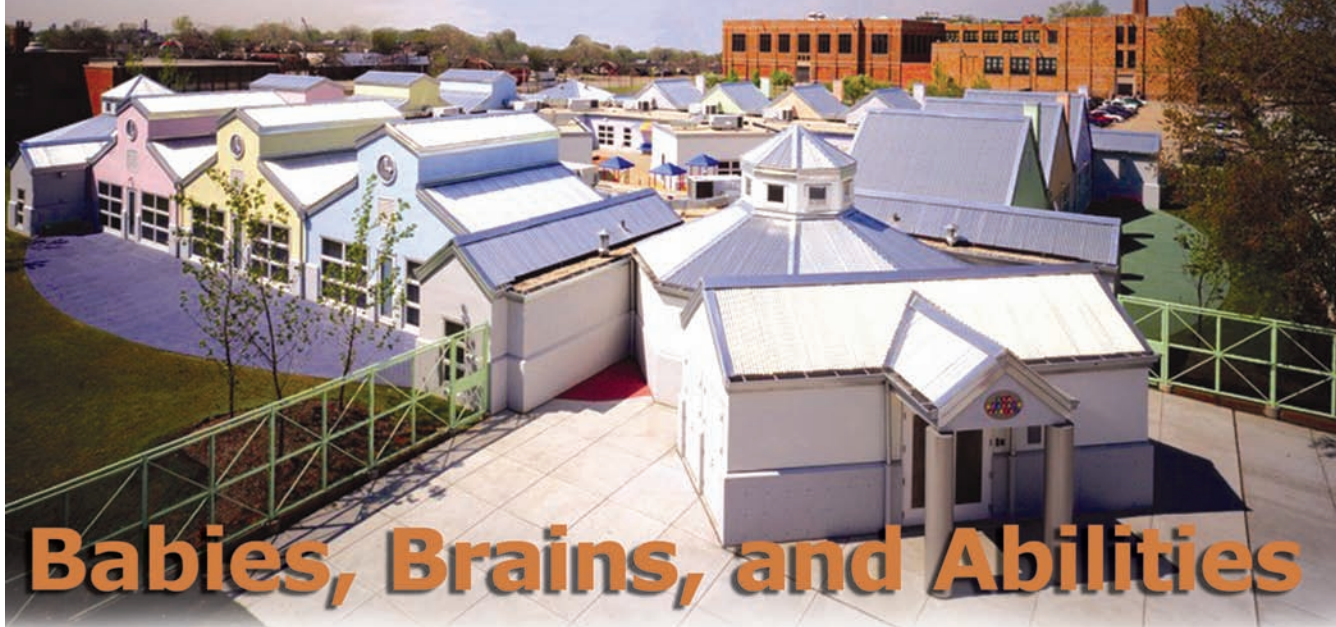
The New Retirement

The concept of retirement may be evolving away from a binary choice — “retired” or “not retired.” In that evolution, economics is reinforcing cultural and demographic factors that were already in place. Boomers will live longer than any generation that preceded them. Many people are realizing that 30 years of retirement is a long stretch for which to prepare financially. Beyond that, while 30 years of leisure may sound attractive in concept, many people would find it profoundly unsatisfying. “Even if you're an avid golfer, it gets boring after a while!” Edelman says. “People are discovering that they want to remain fulfilled and productive and contribute to society.”

Edelman has observed that retirees — or whatever society eventually decides to replace that term with — are

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The nation's first Educare school opened in 2000 in Chicago. The building was designed by the renowned architect Stanley Tigerman.



Babies, Brains, and Abilities

How early investments in education shape life outcomes

BY BETTY JOYCE NASH

In a poor Southside neighborhood where some Chicago cabbies won't even venture, there's a school designed by famed architect Stanley Tigerman. Pastel peaked-roof classrooms enclose an outdoor courtyard. Inside, natural light floods halls and classrooms. The world-class design reflects the school's world-class ambition — to close a persistent achievement gap that threatens economic growth. Children, educators, and parents are building a foundation for human capital, arguably society's most valuable asset. The school serves as a model for early education — birth to age 5 — for kids who need it most.

This is the nation's first Educare school, which opened in 2000. The Educare Learning Network, funded by multiple philanthropic partners, has helped start 13 Educare schools coast to coast.

Inside one classroom, babies squeal, coo, and, of course, cry. They're still transitioning into the school day and the school year. Educare Learning Network's executive director, Portia Kennel, explains that these eight children and three teachers stay together three years. That bond nurtures emotional security, critical for healthy social, emotional, and cognitive development. "What do you think that baby's learning about the world?" she says, pointing out a child being comforted. "That he matters. That's the beginning of learning. You have to know you matter." Insecure attachment has been associated with later behavior problems.

Two Educare schools are bound for the Fifth District. A \$12 million Educare school will open in the District of Columbia in 2012, in the Anacostia area. Another is under development in East Baltimore, connected with Johns

Hopkins University. Others operate from rural Maine to Miami to Seattle to Omaha, with philanthropic partners such as the Gates Foundation in Seattle and elsewhere and the foundation of basketball star Steve Nash in Phoenix.

Educare seeks to bridge the ability gaps that open up at early ages between individuals and across socioeconomic groups. Those gaps exist for both cognitive and non-cognitive skills, according to James Heckman, a Nobel Prize-winning economist at the University of Chicago. Without early intervention, these differences can show up by 18 months.

Economists once thought of childhood as a single stage, and assumed investments at various stages were perfect substitutes, Heckman notes. But they're not. Timing matters: Early investments yield stronger, more cost-effective results than later ones, he argues.

Nurturing Human Capital

Educare isn't day care. It's education all day, all year. It's research-based, monitored, professionally delivered, and tailored to the child. Kennel notes, "If teachers don't know where children are developmentally, how can they individualize, how can they help them?"

Education offers the best potential exit from the cycle of poverty. Early intervention makes the biggest difference in the lives of poor children, who in 2010 comprised 25 percent of the population aged 5 and under. Poor children typically enter kindergarten with fewer vocabulary words and preliteracy skills (identifying letters and sounds, carrying on conversations) than middle-class children. Educare's

students score near the national mean for all children on the Bracken Basic Concepts Scale, with children who spend more years in Educare scoring better, according to the FPG Child Development Institute at the University of North Carolina at Chapel Hill. The scale evaluates communication development and school readiness; literacy abilities at this age predict 11th grade reading success.

Preliminary results are also positive for social and emotional skills such as initiative, attachment, and self control: Educare children enter kindergarten with average or above average skills compared to a national sample of children of all risk and income levels.

That's critical because skills are hierarchical, notes Noreen Yazejian, the principal investigator for a randomized-control study, currently under way, of Educare participants. She is a scientist at the FPG Child Development Institute.

"Adaptation is a lifelong thing, but brain circuitry and associated behaviors develop during sensitive, early periods," Yazejian says. She cites studies on Romanian orphans, neglected early in life, who showed brain-development delays.

The theory of how human capital develops has evolved along with brain science. The main ideas: Later skills build on earlier skills; development is multistage and involves environmental and genetic interaction; and abilities include not only intelligence but also social and emotional ones.

Another dimension of human capital development is its "dynamic complementarity," according to Heckman. When one component of intelligence is improved, that increases

the value added by later learning. This means skills produced at one stage raise the productivity of investment at subsequent stages. Consequently, he argues, the later in life we try to address early deficits, the more it costs. Scientists now know that variations in human characteristics emerge through interactions among genes, the environment, and human capital investments. The once-heated nature vs. nurture debate seems antiquated.

Early intervention has been shown especially to improve noncognitive skills such as attention, self-control, and the motivation to learn. Those abilities fertilize later learning. Kindergarten readiness relies not only on thinking skills but also on physical health, good verbal communication, enthusiasm, curiosity, and the ability to take turns, sit still, and pay attention. Predictable, responsive infant care sets the stage for the formation of these and other skills.

The gap between advantaged and disadvantaged families widens, say Heckman and others, as highly educated, wealthier mothers and fathers spend more time and money on their children and less-educated and poorer parents spend less, on average. As relatively well-educated women work disproportionately more than less-educated women, they have even more resources to spend on children; they also engage with children's schools in far greater numbers. Doing so becomes more difficult in single-parent families, and their numbers are growing.

Talking the Talk

Forty years ago, the prevailing notion was that young infants didn't learn, says developmental psychologist Craig Ramey, now at the Virginia Tech Carilion School of Medicine and Research Institute. But in lab studies between 1968 and 1974 at the University of California at Berkeley, he found that even at six weeks, they could do more than that. "They could show us, up to three months later, in laboratory situations, that they could remember what they'd learned. That was big, breakthrough news."

He also studied children with "failure-to-thrive" syndrome, ranging from 6-month-olds to 2 1/2-year-olds. "They were developmentally delayed — they might have had the repertoire of a 3-month-old," he recalls. "I was able to show if we could engineer the right kinds of feedback for those kids, who tended to be virtually inert, that we could get them to show a tremendous amount of developmental recovery."

With a collection of studies under his belt, Ramey got the funding to scientifically investigate the prevention of developmental delay. Now famous, the series of studies known as the Carolina Abecedarian Project grew from the study he launched, a randomized-control investigation carried out at the FPG Child Development Institute, which had recruited Ramey.

Selected Results of Three Early Childhood Studies

Study:	Carolina Abecedarian	HighScope/Perry	Chicago Child-Parent
Date, design:	1972-1977; random control trial	1962-1967; random control trial	1985-1986; matched neighborhood
Location:	Chapel Hill, N.C.	Ypsilanti, Mich.	Chicago
Sample size:	111	123	1,539
Ages:	Infant to 5	3-4	3-4
Schedule:	Full day, year-round, weekly home visits	Half-day, school year, weekly home visits	Half-day, school year
Crime:	No significant reduction in self-reported convictions, age 21	32 percent v. 48 percent arrested for violent crimes, age 40	16.5 percent vs. 21.1 percent arrested for felony
Education:	35 percent graduated or attending 4-yr. college vs. 14 percent (age 21)	65 percent vs. 45 percent HS grad (female: 84 percent vs. 32 percent) (age 40)	71.4 percent HS grad vs. 63.7 percent; 4 yr. college attendance 14.7 percent vs. 10 percent (age 23-24)
Employment:	65 percent vs. 50 percent (age 21)	76 percent vs. 62 percent (age 40)	42.7 percent vs. 36.4 percent (age 23-24)
Cognitive effects:	Higher language, reading, math scores through age 21	Higher achievement test scores age 9-11; higher literacy scores ages 19, 27	Higher achievement test scores in adolescence
Return per \$ spent:	\$4.10 (Masse & Barnett, 2002)	\$7-\$10 (Heckman et al., 2009)	\$7.10 (Reynolds et al., 2001)

SOURCE: Project websites

Four cohorts of children born between 1972 and 1977 were assigned at random as infants to the intervention or the control group. All came from lower-income families; the intervention group got full-time care from infancy through age 5. Abecedarian followed up at ages 12, 15, 21, and most recently at age 30. At age 21, those in the treatment group earned higher scores on intellectual and academic measures as young adults, had more schooling, were more likely to attend a four-year college, and were older when their first child was born. Publication of age 30 results is pending.

Latesha Foushee now works at the center where she once was studied, from the time she was 6 weeks old, in 1975, until she was age 5. When she was born, her father was 16 and her mother, 19. “In the neighborhood I grew up in, everyone was in public housing,” she says. “I see friends who still live in the same housing development their parents lived in, see that cycle they fell into, and some have gotten into drugs. When you’re given an opportunity to grow and to learn and to know, that opens the door to success.”

Foushee has worked in child development for 17 years. At FPG she teaches children to play in order to learn. Communication is constant. Infants learn sign language, for instance, to signal their needs. The teachers promote friendship, the ability to get along. “Some kids are very shy and need prompting on how to handle situations,” she says. “To make friends, we may say, ‘I see Sam is at the table playing with blocks. Would you like to join Sam and me at the table? Why don’t you ask Sam if you can help him play with blocks?’” As she relates this example, her voice assumes a friendly, energetic tone, as though she really is speaking to the children in question.

The Abecedarian and similar small-scale studies showed that high-quality interventions boosted cognitive and noncognitive skills. Though effects on intelligence tests weren’t long lasting in some cases, other effects were. “The issue of whether you can make major changes and whether they have long-term consequences — that issue is settled, in principle,” Ramey says. Today, he’s focused on the first three years of life, a period over which differences emerge “in a very reliable and dramatic way.” The brain may be the body’s most genetically influenced organ, he notes, but it’s also the most malleable.

Think about language. No one knows just by observing a child what language he or she will speak. “And over three years you have this incredibly complex, flexible linguistic system in place, contingent on who’s been caring for the kid and what their characteristics are,” he says. “To me, that’s always been a dramatic example of how we get influenced by our surroundings.”

The sheer number of words a child hears predicts later literacy. In a 1995 study, psychologists Betty Hart, a professor emeritus at the University of Kansas, and the late Todd Risley recorded and analyzed verbal interactions in 42 families of varying occupational backgrounds from the time children were 10 months until age 3. Children of parents with professional jobs heard an average of 2,153 words per



To practice continuity of care, children at Educare stay with the same teaching team from birth to age 3. This also fosters emotional security.

hour; those of parents with working-class jobs, 1,251 an hour; and those of parents receiving welfare benefits, 616. The authors concluded that quantity matters. The amount of talk between children and caregivers may be the most important aspect to evaluate in child-care settings.

Talk and response is crucial, says Liz Pungello, a developmental psychologist at FPG on the Abecedarian team. “The more you can wash them with words, the more all those synapses are being stimulated really early on.”

Scaling Up

The successes of small-scale early interventions, though, have eluded the nation’s largest efforts to close gaps for disadvantaged kindergarteners. Those began with the federal Head Start program in 1965, which now serves about 40 percent of children ages 3 to 5. Eligible children are those in foster care or whose families are homeless or poor enough to receive government aid such as Temporary Aid to Needy Families. Head Start pioneered the concept of kindergarten readiness for the poor at a time when new evidence showed poor children face extra risks. Early Head Start began in 1995; about 5 percent of eligible infants and toddlers through age 3 are enrolled.

Today, low-income parents also have other child-care options. Forty states fund prekindergarten programs, though state per-child spending fell by an average of \$114 in the 2009-2010 school year. That includes funding from the 2009 American Recovery and Reinvestment Act, according to the National Institute for Early Education Research. The FPG Child Care Center, for instance, will close permanently in 2013, due to state and grant agency budget cuts. (The Child Development Institute, however, will continue research.)

Head Start quality is uneven and outcomes mixed, much as schools in general vary. Some studies find that academic effects fade by age 8, especially for children who subsequently attend relatively poor-quality schools, more likely for black children than white. Evidence is mixed about whether Head Start kindergarteners are more prepared

generally, socially and emotionally, than those who did not participate in the program.

Ramey and his wife, Sharon Landesman Ramey, note in a paper that the most effective elements of the early demonstration programs have proved problematic for Head Start: documentation, unannounced classroom assessments, timely reports about the program's quality, good attendance rates and records, an appropriate "dose" (hours per day and weeks per year), highly trained staff, and ongoing professional development. About half of Head Start's programs are half-day, and many operate fewer days than a traditional school year. Children spend, on average, just 25 hours a week in a Head Start classroom, with gaps filled by another publicly funded provider. And its teachers don't get paid as much as regular public school teachers.

It's tough to successfully scale up the models such as Abecedarian and the Perry Preschool Project, a Michigan program for disadvantaged black children in the 1960s that benefited the treatment group. One problem is knowing exactly what works. Early childhood research has yielded insights into "structure" and "process." Structure includes elements such as the number of books in a classroom, teacher education, teacher-student ratios, and overall student numbers. The "process" is more mysterious. It's what happens when teachers and students interact, Pungello says. "I can pretty much tell you that if you have one teacher and 12 infants there is no way you will have good process. If you give me one teacher and three infants, I'm allowing for the possibility of good process, but it's not guaranteed."

Scaling up is also partly a funding problem, partly a validation problem. Economist Janet Currie of Princeton University has noted that most evaluations of public programs are "less conclusive than evidence showing effects of

model programs, mostly because there have been very few well-designed studies of longer-term effects."

Though Head Start may have fallen short of closing the gap between poor and middle-class children at kindergarten as Congress intended, its contributions are many and tend to be taken for granted today. The fact that poor kids get immunizations, medical, dental, and mental health care, for instance, is due in no small part to its influence, the Ramey paper notes. Many state pre-K programs draw on the Head Start model.

No Dollar Left Behind

Educare schools blend Head Start funds, which are granted to qualifying community partners, with state and local preschool funds. These schools also rely on one or more philanthropic partners for startup. To operate, Educare spends about \$17,000 to \$18,000 a year per child; the average preschool spending per-child in 2009-2010 was \$4,831. Early Head Start funds, however, may average \$9,000 to \$11,000.

Educare of Chicago is typical: Fifty-two percent of funds come from Head Start/Early Head Start, and another 24 percent from state and local education funds. About 11 percent flows from the private sector. The schools cost about \$8 million to \$12 million to build, with donors' money. On the expense side, some 60 percent of funds go toward salaries. The Educare facility in Chicago is a Chicago Public School building, maintained by CPS.

The salaries make the Educare approach more expensive because it uses a higher teacher-student ratio than most preschools. Educare classrooms have three teachers with credentials in early childhood education: one with at least a bachelor's, one with an associate's degree, and a teacher's aide with a certificate. "Master" teachers also are on staff. Those teachers hold advanced degrees and supervise three to four classrooms apiece.

Educare schools also include child psychologists and counselors to support families. Parent involvement is cultivated. Parents begin to consider their future, Kennel says, as they ponder improved lives for their children. They also are more likely to volunteer in schools later on, as children progress through the educational system.

Educare parents Marquia Fields and Kenya Conley in Chicago cite family literacy nights, for example, as at-home efforts they've learned. These help build their children's vocabulary and thinking skills. Parents like Fields and Conley can also take yoga or personal finance classes. Educare has helped both mothers navigate deadlines and paperwork to get their children into charter elementary schools. Both have older children at Donoghue, affiliated with the University of Chicago and known for academic success. In 2011, 94 percent of its third-graders met or exceeded state math standards. Fields and Conley have served on countless committees at Educare — dealing with fiscal or hiring issues or curricula. They've gotten pretty good at drawing reluctant parents into the fold. An involved parent



Parents Kenya Conley (left) and Marquia Fields (right) visit in Educare of Chicago's family center. Involved parents are essential to Educare's mission as they support children's learning and development. The parents also serve on school committees.

who knows what quality education looks like can volunteer, question the status quo, and influence not only the child's success, but also that of the school. Educare teaches everyone to be a catalyst for change.

Educare also has enhanced their parenting skills, both say. In Wal-Mart one day, Fields calmed her unruly child by discussing the trip, its purpose, and length. "I call that Educare talk," she says. She's more patient. "Now, I am more likely to talk and reason with her."

She and Conley now use expressions like, "Use your listening ears," or "Use your walking feet," requests that promote cooperation and, of course, literacy.

Pie in the Sky Preschool

Human capital theory and top-quality early childhood intervention show the potential of returns to society that exceed alternative public and private investments.

In a *Journal of Economic Perspectives* article, Currie notes that investing in early childhood may be more cost-effective than remediation later, also noted by Heckman and other economists. "In many cases, an ounce of prevention is worth a pound of cure," she writes. Overcoming early disadvantage is often difficult later — returns are relatively low for efforts to train low-skilled adults. And Heckman's research on those who receive General Education Diplomas shows that their earnings are the same as high school dropouts, suggesting that later investments don't compensate for early deficiencies, particularly noncognitive skills such as tenacity and the ability to defer gratification.

But to scale up a program to improve early childhood experiences will be slow and the learning curve steep. Some economists advocate early education as an economic development strategy instead of location incentives for firms. Economist Timothy Bartik describes early childhood education as a policy lever with significant effects on labor force quality per dollar invested. Bartik is with the W.E. Upjohn Institute for Employment Research. "Businesses are increasingly footloose — you don't have to be near suppliers or

natural resources because transportation and communication costs are lower," he says. "Increasingly what is driving business decisions is the location where you can find the best labor force to best meet your needs."

Bartik points out that two-thirds of people spend their working careers in the state where they grew up. State work-force investments in early education might pay off in the long run through increasing the local skilled labor supply. A favorable business climate depends not only on factors such as taxes, but also on labor quality.

Cost-benefit analyses show positive returns for the high-quality early childhood interventions. For the Abecedarian Project, the estimated annual return is \$4.10 per dollar invested, to individuals in the form of increased earnings and to society through increased income tax revenues as well as avoided costs of special education, welfare, and crime. For the Perry Preschool Project, through age 40, benefits are \$7 to \$10, according to Heckman's calculations.

Still, a massive overhaul of early childhood programs with public funds seems unlikely, even though Educare supporters note that the program stretches scarce public money by engaging private-sector partners.

Efforts to form Educare schools start at the grassroots of a community. There's a carrot — more than \$1 million in grants — for a community that successfully starts a school. The grants come from combined funding through major foundations.

Not only does Educare aim to change parents' and students' lives, a lofty goal, but Educare also exists to improve all early education, says Carol Howard, director of the D.C. Educare. "Part of our charge as responsible members of that community of care is to work with providers to have an influence that raises the bar in all the environments." She points out that capacity for the District of Columbia school will be only 175 children. That falls short of demand, by a long shot. "The challenge becomes how do we do our best work with children and families and share that so that it can be replicated beyond the walls of the center." **RF**

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CLOUDY with a chance of... savings

Weather affects every sector of the economy, so there's a lot to be gained from getting the forecasts right

BY JESSIE ROMERO

The local outpost of the National Weather Service (NWS) in Morehead City, N.C., is one of 122 such offices nationwide. But it was one of the first to get a new “dual-polarization” radar that can pick up an unprecedented amount of detail. “We can see the size and shape of water droplets and snowflakes. We can see the crops being ripped out of the ground by tornadoes,” says Don Berchoff, director of the Office of Science and Technology at the NWS. Over the next year, the new radars will be installed at field offices nationwide, allowing meteorologists to see if the line between rain and snow falls over a major highway, or where exactly a tornado has touched the ground.

Humans have been trying to predict the weather since at least 650 B.C., when the ancient Babylonians made forecasts based on the shape of clouds. For most people, the major concern is whether or not to take an umbrella when they leave the house. But weather can affect GDP by as much as \$485 billion per year, according to researchers at the National Center for Atmospheric Research and the University of Colorado, and advance warning of weather events can save both money and lives. Businesses ranging from construction firms to commodity brokerages rely on weather forecasts to plan future projects and make investment decisions. As forecasting technology has improved, so has these companies' ability to protect themselves against risk — but not to eliminate it entirely.

Disaster on the Lakes

Between 1868 and 1869, storms on the Great Lakes destroyed 231 ships, killed 530 people, and caused more than \$7 million in property damage and lost cargo (in 1869 dollars). After previous stalled private-sector attempts to create a national weather forecasting bureau, the publication of the pamphlet *Disaster on the Lakes* by Milwaukee scientist Increase Lapham finally gained the attention of politicians.

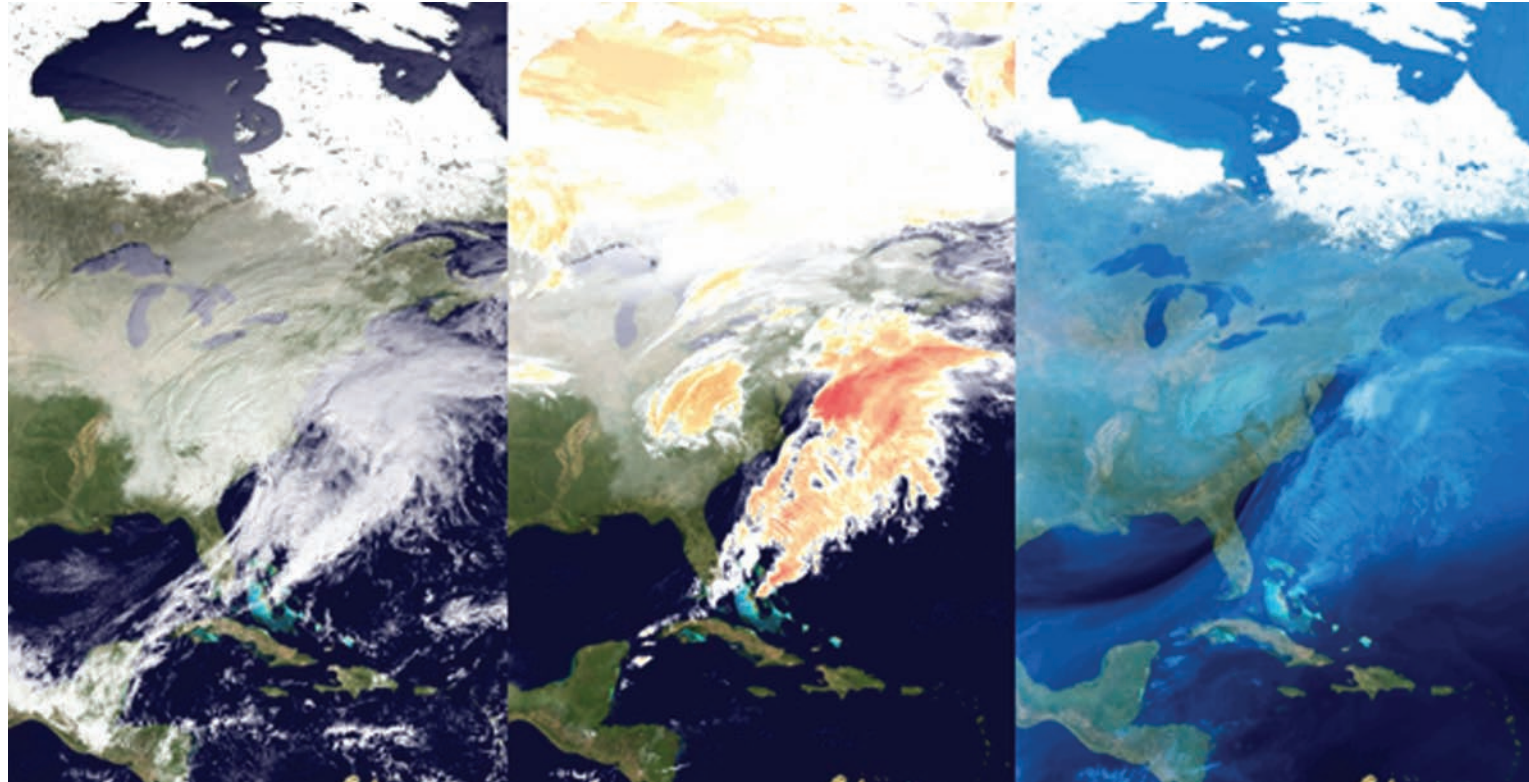
At the same time Lapham was advocating for a weather bureau, the U.S. Army was looking for a reason to maintain its signal corps, whose budget had been cut after the Civil War. The Army seized on the idea of a national weather system, and proposed creating a network of observation stations linked by telegraph. In 1870, Congress mandated the U.S. Army Signal Corps to begin recording meteorological

observations in order to “give notice on the northern lakes and sea coast of the approach and force of storms” with the goal of reducing shipping losses. The new system had an immediate impact on the maritime industry, reducing losses by about \$1 million annually by the mid-1870s, and by as much as \$4.5 million annually by the early 1880s, according to economist Erik Craft of the University of Richmond.

From 1891 to 1940, the National Weather Bureau was housed in the Department of Agriculture, where it issued weekly forecasts to aid in crop planning. In 1940, President Roosevelt moved the bureau to the Department of Commerce to support the growing commercial interest in aviation, which relied heavily on weather forecasts. The bureau was renamed the National Weather Service in 1970 and today resides in Commerce as an agency of the National Oceanic and Atmospheric Administration. Harkening back to its founding, the service's primary mission is the “protection of life and property and the enhancement of the national economy.”

NWS headquarters are in Silver Spring, Md., but the agency depends on its field offices to gather regional data and report it back to the national level. The NWS also has a network of more than 11,000 volunteers who record weather observations such as temperature or rainfall on farms, mountaintops, and sometimes in their own backyards.

Local NWS offices also issue weather warnings and coordinate with local law enforcement and emergency management personnel to plan evacuations or to monitor conditions that could affect events such as a wildfire. “We provide support for anything that needs weather information, whether it's just a forecast, or a hazardous chemical release or a plane crash,” explains Ron Morales, warning coordination meteorologist at the NWS office in Charleston, S.C. In the Fifth District, one of the major concerns is hurricanes. Although the National Hurricane Center, a division of the NWS, tracks storms while they are at sea, the local office is responsible for the storm once it makes landfall. During this past summer's Hurricane Irene, meteorologists worked in 12-hour shifts to issue warnings and keep track of the storm's effects on the tides and inland areas. As many as 200,000 tourists and residents were evacuated from Morehead City and other towns along North Carolina's coast, which suffered major flood damage.



Satellite images of a snowstorm taken in 2011.

As the population has grown in areas prone to wildfires, hurricanes, and floods, so has the potential scale of future “disasters on the lake.” Between 1960 and 2008, the population in coastal counties increased 84 percent, compared to 64 percent in noncoastal counties, and growth in the number of housing units also outpaced growth in noncoastal counties. Using a technique called normalization, the NWS can estimate the damage that would occur if a storm from the past hit under current societal conditions. If the Great Miami Hurricane of 1926 had instead made landfall in 2005, it would have caused about \$150 billion in direct damages (in 2005 dollars), nearly twice the damage caused by Hurricane Katrina.

Building a Better Mousetrap

In the early days of the signal service, forecasts were based primarily on the assumption that the weather in the West would continue moving east. Army personnel stationed at 24 points across the country meticulously recorded the temperature, barometric pressure, and wind speed three times per day and telegraphed the information to Washington, D.C., where maps were made of the conditions. If a storm was predicted, personnel on the Great Lakes and Atlantic Seaboard would hoist red flags to warn ships of dangerous weather.

Today, the NWS processes more than 210 million weather observations each day, gathered by weather balloons, ocean buoys, automated surface observation stations (ASOS), and a sophisticated network of radar devices and satellites. In addition to the dual-polarization radars, NOAA is launching a new geostationary satellite, called GOES-R, in 2016. Geostationary satellites, which move at the same speed as the Earth’s rotation and thus remain in the same relative position, orbit 25,000 miles above the ground, producing the images commonly seen on

television during the evening news. Currently, it takes about 15 minutes to download a satellite image, but the new satellites will be able to create images every 30 seconds, allowing meteorologists to see storms develop almost in real time. “You can literally see the clouds moving up and down, and the boundaries of a storm moving around,” says Morales. The GOES-R also can detect lightning while it’s still in the clouds, making it possible to predict if and when lightning will strike the ground.

Those millions of observations are fed into large-scale numerical models, which require a massive amount of computing power. In 2009, the NWS finished installing a \$180 million supercomputer system that’s half the size of a tennis court and can perform 69.7 trillion calculations per second. But even that’s not enough for some of the new technologies; in February of 2011, the NWS announced a 10-year, \$502 million project to build an even faster computer. “Our science is actually getting ahead of our ability to run these models,” Berchoff says.

The combination of better observations, more sophisticated models, and faster computers has greatly increased the accuracy of weather forecasts, especially during the past 10 years. A decade ago, forecasts were accurate for an area the size of a county; now, forecasters can predict weather specific to an area of 8 or 9 square miles. The next goal, according to Berchoff, is to improve the accuracy to the neighborhood level. Forecasters also are able to predict major storms with significantly more lead time than in the past. The NWS knew that “Snowmageddon,” the snowstorm that shut down Washington, D.C., in 2010, was coming six days before it hit, which enabled airlines to cancel flights 24 hours in advance, preventing both people and airplanes from getting stranded. “Ten years ago, people would have gotten stuck in the airport — you would have seen them on CNN, in sleeping bags on the floor. And the airplanes could be sent to where they

could be productive the next day,” Berchoff says. “Good forecasting avoided a lot of costs that would have occurred otherwise.” Forecasters also are better able to predict the path that storms will take. The improved accuracy of hurricane forecasts prevented the evacuation of hundreds of miles of Florida coastline during Hurricane Irene. John Whitehead, an economist at Appalachian State University, estimates the cost of an evacuation is between \$1 million and \$50 million per county; some estimates are as high as \$1 million per mile of coastline.

Good forecasting isn’t always enough, however. The development of Doppler radar and a national warning system decreased tornado deaths by 70 percent between 1920 and 1990, to fewer than 60 per year. But in 2011, more than 500 people were killed in tornadoes, with most of the casualties in Tuscaloosa, Ala., and Joplin, Mo. “Unfortunately, we had good forecasts in Tuscaloosa and Joplin, but a lot of people still died,” Berchoff says. “How do we reduce loss of life even when we put a good forecast out? Part of that is just communication. That’s what we’re working on now.”

Communication was a major concern during Hurricane Katrina in 2005. About three days before the storm hit New Orleans, the NWS predicted Katrina’s path within 15 miles, compared to a typical margin of error of about 100 miles, but it wasn’t until the day before the storm that state and local officials ordered mandatory evacuations. Several hours before those evacuation orders, the NWS also issued a statement that “devastating damage [is] expected... most of the area will be uninhabitable for weeks... water shortages will make human suffering incredible by modern standards.” Some private forecasters contend that the NWS waited too long to issue its warnings, but it’s not clear how much destruction to person and property would have been prevented if they had issued them earlier. Coordination failures among local, state, and federal officials and private agencies prevented effective response to the storm.

A Public Good Goes Private

Weather information is generally viewed as a “public good,” like the military or the U.S. highway system. A public good is characterized by nonexcludability, meaning that it is difficult to prevent an additional person from using it, and by nonrivalry, meaning that use by one individual does not diminish the availability of the good for another. These characteristics make it difficult to charge a price that would enable the private sector to recoup the costs of development; “free riders” can use the good without contributing to its creation or maintenance. In economic theory, these features are the basis for programs in which the government steps in to provide a socially desirable level of the good. Weather forecasts can be viewed as meeting both of these criteria, so although there were private organizations, such as Western Union and the Associated Press, that could have created a national forecasting network in 1870, it’s doubtful that they had the incentives to do so, according to Craft of

the University of Richmond. In addition, the feasibility and benefits of weather forecasts were far from proven at that time, so the private sector likely was happy to wait and see if the government’s investment would pay off.

Today, that investment totals a billion dollars per year, and a network of private weather forecasting companies has developed to take advantage of the federally created data. Because the NWS is taxpayer-funded, it shares its data with private firms. These companies run the data through their own proprietary models, customized for industries including construction, energy and utilities, agriculture, and commodity trading, among others. Currently, there are about 300 private weather organizations in the United States, including national brand names such as The Weather Channel, which operates a large weather consulting division in addition to its more famous television network. While the field is still relatively small, it’s growing; the Bureau of Labor Statistics predicts that the number of meteorologists in the United States will increase 15 percent, to 10,800, by 2018, with nearly all of the growth in the private sector.

The demand for private weather information is boosted both by the perception that weather events have become both more frequent and more extreme, and by technological improvements that make highly specialized forecasts possible. In particular, advancements in geographic information system (GIS) technology have made it possible to combine weather information with detailed geographical data, allowing businesses to see how the weather will affect specific factories or jobsites. Construction companies, for example, can’t pour concrete or install roofs when it’s raining, and a sudden storm can damage thousands of dollars of materials at unprotected worksites — not to mention the danger of workers getting struck by lightning. Electric companies need to plan for usage days in advance, and under- or overestimating the temperature can cost millions of dollars when extra capacity has to be bought on the spot market or existing capacity goes unused. High winds, lightning strikes, and even minor storms can damage lines and cause power outages. The majority of investor-owned utilities, which provide about 75 percent of the United States’ electricity, work with private weather firms to forecast peak demand and deploy repair crews.

Although state and local governments get general weather warnings and advisories from the NWS, they also hire private forecasters for more specialized uses such as planning for outdoor events or to see the effect of a storm on a block-by-block basis. In 2007, the departments of Public Works and Transportation in Montgomery County and Prince George’s County, Md., for example, both began working with a private forecasting firm to predict hours in advance of winter storms which areas would be most in need of salt trucks and snowplows. Prince George’s County estimates that it saved up to \$100,000 during that first winter by sending trucks only to where they were needed rather than deploying them countywide when some areas saw only rain.

Agriculture is the industry most obviously affected by the weather; a long hot spell, too much rain, or an early frost all can affect when to plant or harvest, or even destroy most of a season's crop. Advance information about the weather helps farmers plan for such events. Highly detailed freeze/frost reports, for example, can inform a farmer's decision about the best method to protect crops, ranging from covering them up with blankets to hiring helicopters to fly over the fields circulating warm air. Although the U.S. Department of Agriculture (USDA) issues a weekly weather and crop bulletin, many farmers turn to other sources in order to get more frequent information about wind speed, precipitation, temperature, and evaporation rates. Large farming operations devoted to major crops such as corn, cotton, or soybeans generally hire private forecasters, while smaller farms tend to rely on their cooperative extension service and state climate office (SCO), according to Ryan Boyles, director of the North Carolina SCO at North Carolina State University.

Weather forecasts also inform pest and disease control decisions; certain diseases thrive only in certain weather conditions, which means that farmers can skip spraying on occasion, generating significant savings. The North Carolina SCO issues a daily disease update for peanut growers, eliminating several sprays per year, Boyles says.

Weather doesn't affect only the crops themselves — it also affects the value of billions of dollars worth of commodity futures and options contracts. The amount invested in commodities has more than doubled since 2006, to \$431 billion, according to Barclays Capital, and agricultural products such as coffee, corn, soybeans, and wheat are among the most heavily traded products.

Futures and options are investments designed to hedge against risk. A futures contract specifies the amount of a good to be sold on a date in the future, at a price determined today. The buyer of the contract is making a bet that prices will rise, and thus that they'll be able to buy the good at the lower contract price and then profit by selling it at the market price. The seller of the contract is betting that prices will fall, and trying to lock in a higher price now. Options contracts operate on a similar principle, except that they give the buyer the right, not the obligation, to fulfill the contract in the future; many options traders choose to sell the contract itself at a profit rather than buying the underlying good. The prices of both futures and options contracts are affected by the same factors that affect supply and demand for the underlying commodity. In September, for example, a heat wave caused the USDA to cut its corn yield estimates for the second time in two months, causing corn futures prices to surge. Commodity traders pay close attention to weather forecasts in an effort to anticipate those price changes, often subscribing to multiple specialized forecasts for both the United States and around the world. "There are a lot of weatherheads out there. We get three or four different services sent to us daily," says George Kopp, a broker with the International Futures Group in Chicago, Ill. Those



Weather tracking has come a long way since this U.S. Army Signal Corps weather map drawn in 1872.

services might provide daily updates on the temperature in Argentinean soybean regions, or on the rainfall during the Midwest's corn harvest. Currently, Kopp and other traders are paying special attention to predictions of a La Niña episode over the Pacific Ocean; La Niña creates atypical patterns of drought and rainfall, which affects prices for crops throughout South America, Australia, and some parts of the United States.

The ubiquity of weather information and its easy availability on smartphones has changed the way people operate, says Scott Shellady, derivatives manager and an agricultural specialist at ICAP, an international interdealer broker. (Interdealer brokers facilitate high-volume trades between major dealers such as investment banks.) "Weather information gets around the world in two seconds. Where you used to have a lag on hot and dry weather in Argentina, now everybody knows that instantaneously. You have to pay attention or you're going to be left behind by everybody else," he says.

Predicting the Unpredictable

At the end of the day, weather is inherently unpredictable; no matter how fast the satellite or how large the computer, forecasts will never be 100 percent accurate. Hurricane intensity, for example, is notoriously difficult to predict; overestimations of the intensity of Hurricane Irene might have focused too much attention on coastal damage, when inland flooding was the real threat. But the goal isn't perfection, says Berchhoff of the NWS; instead, it's improving the accuracy of the probabilities. "If we can consistently provide information that says there's a 70 percent chance that something is going to occur, and it really occurs 70 percent of the time, that's a tremendous amount of intelligence."

Weather forecasters might not be able to provide absolute certainty, but the market has found a way to further mitigate the risks of unpredictable weather. In the late 1990s, energy companies began trading weather derivatives as a hedge against lost revenue due to adverse weather

conditions. The typical weather derivative is based on the average temperature over a period of weeks or months; one party to the trade profits if the number of hot (or cold, depending on the contract) days is above the strike price, and the other party profits if the number is below. A heating oil company, for example, stands to lose revenue if a winter is warmer than expected, so it might place a bet that the number of hot days will be higher than the strike price. If the winter is warm, the decrease in revenue is offset by profits on the derivative contract. If the winter is cold, then the increase in revenue covers the losses on the derivative.

The Chicago Mercantile Exchange launched its first weather derivative product in 1999, and last year more than 1.4 million derivative contracts were written, for a total value of more than \$11 billion. In 2006, after Hurricane Katrina, the value of contracts was more than \$45 billion, according to the Weather Risk Management Association. The primary

users of weather derivatives are energy companies, but a growing number of construction, agricultural, and outdoor entertainment companies are entering the market. Unlike insurance, which protects only against catastrophic events, weather derivatives offer these companies a bulwark against more mundane occurrences.

Catastrophic or mundane, weather is beyond the control of the people it affects. As the models and technology improve, however, it becomes increasingly possible for individuals and businesses to use that information to arm themselves against whatever the weather might bring. Models aren't perfect; the residents of Vermont knew Hurricane Irene was coming, but they didn't expect that much of their landlocked state would end up under water. Still, as scientists keep trying to get better at predicting the unpredictable, businesses will continue to seek out every extra drop of certainty. **RF**

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RETIREMENT • *continued from page 28*

increasingly opting to move into a less stressful line of work, take a part-time position, work a few months of the year, or pursue lifelong passions for which their careers never allowed time. Their reasons might be economic — but then again, maybe not. A recent survey by insurance company Allstate and the *National Journal* found that 68 percent of near-retirees planned to work in retirement, but only half out of financial necessity. Only 11 percent of current retirees

reported some form of work. For boomers, the concept of retirement is growing more ambiguous.

It would seem fitting for baby boomers to be the ones to set this trend in motion. "I think we're going to have to just watch them to see what happens," Weatherford says. "These are boomers. They have always been the hard-charging, hard-working generation. I really do think they're going to redefine it for us all." **RF**

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Where Did the Money Go?

BY CHARLES GERENA

“Credit Flows to Businesses During the Great Recession.” Pedro Amaral, Federal Reserve Bank of Cleveland Economic Commentary No. 2011-15, August 2011.

In a typical recession, businesses tend to reduce their borrowing from financial institutions. But the downturn in credit flows during the 2007-09 recession was the largest in the post-World War II era.

In a recent report, Cleveland Fed economist Pedro Amaral writes that a variety of interrelated factors could have constrained the flow of credit. “The funds available for lending were scarcer, financial institutions presumably became more risk averse as their balance sheets worsened, and their attitudes toward risk changed,” he explains.

Also, feedback mechanisms were at work. “As economic conditions worsened, the businesses that financial institutions would lend to became less creditworthy since their own balance sheets and future prospects had deteriorated,” notes Amaral. “Moreover, for this same reason, their demand for funds also retracted.”

Using data from the Federal Reserve Board’s Senior Loan Officer Opinion Survey on Bank Lending Practices, Amaral found that while standards for commercial and industrial lines of credit appeared to tighten, demand for these loans also fell. He also looked at the spreads between corporate bonds and U.S. treasuries, as well as the spreads between different types of bonds. He wanted to see if financial institutions pursued safer, more liquid investments to help stabilize their balance sheets, or saw higher risks for lending.

“There was a flight to liquidity”... as overall uncertainty jumped,” notes Amaral. But nonfinancial companies also “became worse risks, as the market for corporate bonds shows, which contributed to further declines in credit flows.”

“The U.S. Content of ‘Made in China.’” Galina Hale and Bart Hobijn, Federal Reserve Bank of San Francisco Economic Letter No. 2011-25, August 2011.

While studying the implications of inflation in China on prices in the United States, economists Galina Hale and Bart Hobijn of the San Francisco Fed unearthed a wealth of details on how much we spend on Chinese imports and what fraction of that spending actually goes to China. The results show that while we continue to have a trade imbalance with China, not as much of our spending goes abroad as is commonly believed.

For example, most of the stuff Americans buy is still produced here — about 88.5 percent of personal consumption expenditures (PCE) went toward U.S.-made goods and services in 2010. This is largely because services — which are

produced locally, for the most part — made up two-thirds of PCE. Chinese goods were only 2.7 percent of overall expenditures, though they accounted for larger chunks of spending in certain categories, such as clothing (35 percent) and furniture (20 percent).

Furthermore, not all of the money spent on Chinese goods goes toward the cost of those imports. Take a pair of sneakers made in China. “The bulk of the retail price pays for transportation of the sneakers in the United States, rent for the store where they are sold, profits for shareholders of the U.S. retailer, and the cost of marketing the sneakers,” note Hale and Hobijn. Then there are the salaries, wages, and benefits of the people who run these operations.

When the researchers took into account the inputs of production that were imported from foreign countries, including China, the domestic share of U.S. personal consumption expenditures was somewhat lower: 81.9 percent of PCE went to goods and services produced in the United States using U.S.-made parts. The other 6.6 percent were for U.S.-made goods that used imported parts.

And of the 2.7 percent of PCE that went to Chinese goods, 1.5 percent was spent on goods with U.S.-made parts. That leaves less than 2 percent of consumer spending which went into China’s economy.

“The Production Impact of ‘Cash-for-Clunkers’: Implications for Stabilization Policy.” Adam Copeland and James Kahn, Federal Reserve Bank of New York Staff Report No. 503, July 2011.

Among the many efforts to boost consumer spending in recent years, the “cash-for-clunkers” program offered \$2.8 billion in rebates on new-car purchases to people who traded in their fuel-inefficient vehicles during July and August 2009. New York Fed economist Adam Copeland and James Kahn at Yeshiva University looked at how the program affected both U.S. automobile sales and production.

About 450,000 additional sales were initially generated, but most of them resulted from people either delaying purchases they would have made before the program started or accelerating purchases they would have made later in the year. As a result, the cumulative effect on car sales by January 2010 was zero.

The cash-for-clunkers program had a modest and short-lived effect on production, as well; carmakers had to produce only 200,000 additional units to fulfill the 450,000 additional orders they received. “A large portion of the sales increase came out of inventories,” note Copeland and Kahn, “and even the modest step-up in production in July and August was partly offset by retrenchment in September.” **RF**

Michael Bordo

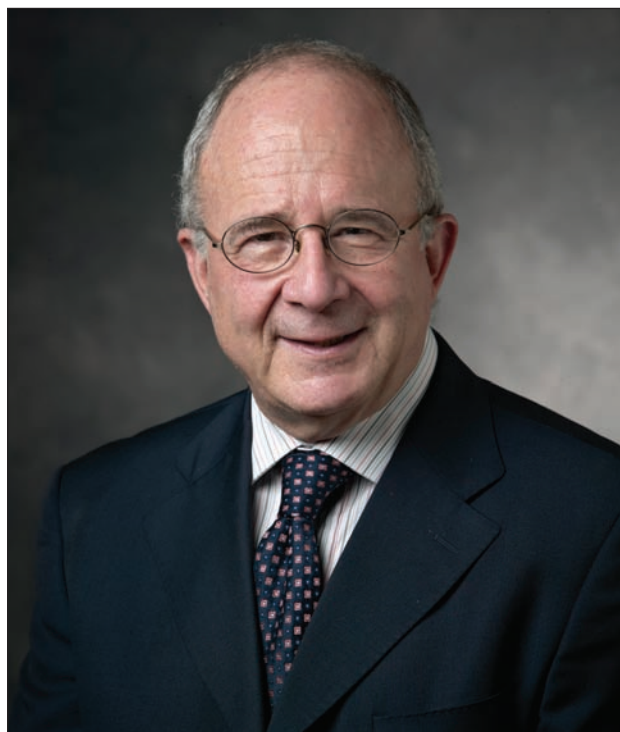
Editor's Note: *This is an abbreviated version of RF's conversation with Michael Bordo. For the full interview, go to our website: www.richmondfed.org/publications*

Many observers have compared the financial crisis of 2007-2008 and the Great Recession to the Great Depression. While one shouldn't downplay the hardships that many Americans have suffered in the last four plus years, a quick comparison of the raw data from those two episodes demonstrates how much more mild the Great Recession was, says monetary historian Michael Bordo of Rutgers University. Roughly one-quarter of Americans were out of work during the worst period of the Great Depression compared to roughly one-tenth during the Great Recession. Also, real GDP dropped at a staggering pace in the early 1930s, about 25 percent, compared to a 5 percent drop during the Great Recession.

In addition, the initial crises largely had different causes, Bordo argues, and the sluggish economic recoveries following those crises can generally be attributed to different factors. But in both cases, policy mistakes by the Federal Reserve contributed to the economy not rebounding more quickly. The Fed learned from the Great Depression by providing much-needed liquidity to the financial system after the crisis, but it engaged in a "too big to fail" policy that made things worse and that set a bad precedent for future actions. Moreover, the Fed's close collaboration with the Treasury Department and other measures it took have greatly compromised its independence. In Bordo's view, the Fed should limit the scope of its activities, focusing on price stability, and should enact a transparent set of monetary policy rules in lieu of a more discretionary approach to policymaking.

Internationally, Bordo's historical work suggests that monetary unions comprised of multiple nation-states with separate fiscal agents tend to be relatively fragile, a point that he argues is consistent with recent developments in the eurozone. Ultimately, he believes that eurozone policies will require significant revision, though a single currency may be preserved in a modified form.

Prior to joining the Rutgers faculty, Bordo taught at the University of South Carolina and Carleton University in his home country of Canada. In addition, he has held visiting positions at numerous universities in the United States and abroad, in addition to several central banks. He was a visiting scholar at the Federal Reserve Bank of Richmond in 1988. Aaron Steelman interviewed Bordo by telephone from the Hoover Institution at Stanford University, where Bordo is visiting during the 2011-2012 academic year.



RF: I would like to start off with an admittedly very large question: What do you think were the proximate causes of the financial crisis of 2007-2008?

Bordo: I think that the deepest problem, and it goes back to the 1930s, is U.S. housing policy. The policy is generally to encourage people to own homes, and it has been supported by both political parties since the New Deal. I think it's hard to pin the blame on any one organization such as Fannie Mae or Freddie Mac or the Federal Housing Authority, but rather we should focus on the bundle of measures that have been adopted over the last 75 years. So that sets up the background in that you have an official policy to encourage people to own homes and thus to make mortgage finance as easy as possible.

There were other factors as well. Diffuse financial regulation resulted in different agencies handling different parts of the financial system with inadequate coordination to collectively understand the building up of leverage and the growing exposure of the shadow banking system. We also saw problems with corporate governance in that once the incentives were there to expand cheap mortgages, the private sector came up with ideas leading to financial innovation that produced some abuses. But in terms of ordering, I don't see corporate greed as causing the trouble. I think it goes all the way back to housing policy and govern-

ment regulators being captured or not being on the ball.

What I think fueled the credit boom that burst was expansionary monetary policy between about 2002 and 2005 on the mistaken view, in my opinion, that we faced a great risk of deflation. So the Fed kept interest rates very low. That, I think, provided the fuel for the fire.

I don't think monetary policy caused the crisis, but I think it played a very important ancillary role. And I think that Fed policy has largely been misguided since the crisis hit. The Fed did the right thing in 2007 by viewing the situation as a liquidity crunch and being very expansionary. But then the Fed sat on its hands in 2008 because it was worried about commodity price inflation, and that got the recession going. Then, of course, the Fed made huge mistakes by being inconsistent in the way it treated Bear Stearns and Lehman Brothers. I think the Fed should have let Bear Stearns go. There would have been a lot of fallout from that but not as much as was caused by bailing them out and then letting Lehman Brothers go. And then, of course, the Fed bailed out AIG and the Treasury put Fannie Mae and Freddie Mac into conservatorship. There was a lot of inconsistency and that made things much worse.

An issue that I don't think was a big problem, but that many others do, was the global savings glut. I just don't see these global imbalances as causing the subprime crisis. I think it was much more of a homegrown, U.S.-created crisis that spread to the rest of the world. I am aware that there were housing busts in parts of Europe, such as Spain, Ireland, and the United Kingdom. But I think that the U.S. story with subprime and the extent of the kinds of practices that took place were unique. Europe has had many housing booms and busts, and I think that the U.S. event was caused mostly but not entirely by U.S. forces.

RF: What commonalities and what differences do you see between the policy responses and the longer-term economic consequences stemming from the Great Depression and the Great Recession?

Bordo: There are some big differences and some similarities. The Great Depression was generally caused by a series of banking panics in the United States and the Fed did not do what it should have: act as the lender of last resort to the money market. So that's why a severe recession turned into a depression. In 2007, the Fed knew about this and it avoided the mistakes that were made from 1930-1933. There was a liquidity policy in place during the recent crisis. The other thing, of course, is that the Great Depression was so much more severe. Real GDP fell by 25 percent from 1929 to 1933, whereas it fell by 5 percent from 2007 to 2009. And unemployment went from close to zero up to 25 percent compared to 5 percent up to 10 percent. So if you go through

I think that some people mistakenly believe that policy discretion helps to sustain the independence of the Fed, when it actually weakens it.

all the numbers, every single one will yield roughly the same relative difference. The people who were talking about the Great Recession being comparable to the Great Depression were way off base.

Still, there is the question of the counterfactual: Had the Fed and other central banks not implemented a liquidity policy, would the

Great Recession have been as bad? My answer is that it would have been worse than it was, but it would not have been as bad as the Great Depression. We learned a lot of lessons from the Great Depression. We have these automatic stabilizers in place, we have many more fail-safes, and the economy is different. It is now much less industrialized and much more service oriented.

During the Great Recession the real problem was insolvency and the fear of counterparty insolvency. That really wasn't picked up by the Fed and other central banks until quite late. They didn't understand that in 2007 or even in early 2008. They thought it was fully a liquidity problem. And when it became clear it was an insolvency problem, they shifted gears and got into bailout mode. That produced another series of mistakes because the "too big to fail" doctrine was invoked, but it wasn't just invoked for banks, it was invoked for both financial and nonfinancial firms. This is a very key difference between the 1930s and now. In the 1930s, the United States did not follow too big to fail. But we also didn't follow Bagehot's rule either. Instead, we allowed everyone to go.

Regarding long-term economic consequences, the banking and financial systems were blamed for the Great Depression. So we got New Deal financial regulation, which greatly suppressed financial innovation and it greatly reduced risk-taking in the financial sector. The governance of the Federal Reserve also changed substantially. From 1935 to 1951, it lost its independence and became subservient to the Treasury. Further down the road, all the financial suppression that was instituted led to evasion and financial innovation and that led to new sources of systemic risk. So, in a sense, the consequences of the New Deal regulations took many decades to get worked out but they were entirely unintended.

In the wake of the Great Recession, some people have said that we should not have gotten rid of Glass-Steagall or interest rate ceilings or other New Deal regulations, and they point to how stable the banking system was between the mid-1930s and the early 1970s. What those people forget are the efficiency losses associated with such regulations and also the fact that the U.S. financial system was losing out relative to financial systems in other countries.

Also, I should say that, while the Fed has not become simply an arm of the Treasury following the Great Recession as it did following the onset of the Great Depression, I think its independence has been greatly compromised. During the

heat of the crisis, the Fed itself did a lot of things to cripple its independence. It got involved in fiscal policy with the Treasury, it got involved in credit policy by allocating resources in a very specific manner, it got involved in debt management through quantitative easing. So the Fed moved very far away from independence from the fiscal authority. Monetary policy has become more politicized and the Fed's mission has become diluted. I think those changes could produce very large costs.

RF: What, in your opinion, can the Fed do to get back on track, so to speak?

Bordo: It needs to get back to basics; it needs to focus on price stability and stop trying to fine-tune the economy through highly discretionary policy, and that means following a very transparent policy rule. Preferably, the Fed would get congressional approval for that rule, so that the Fed can stop worrying about Congress always being on its back. Also, if there is a rule, Congress can, in a sense, require the Fed to prove that it is following it. For instance, under monetary aggregate targeting, the Fed had to report how it was doing relative to the targets that had been established. Something like that is needed to restore independence. I think that some people mistakenly believe that policy discretion helps to sustain the independence of the Fed, when it actually weakens it.

RF: Some historians have argued that the Great Depression ended due to the industrial buildup prior to and during World War II. What do you make of that claim?

Bordo: That explanation is not completely correct. The recovery from the Great Depression that started in the spring of 1933 was really rapid — GDP grew something like 36 percent from 1933 to 1936. That was fueled not by monetary policy but largely by Treasury gold policy — in particular, large gold inflows from the revaluation of gold, which acted like monetary policy. But the recovery was not complete in the sense that the real economy did not recover as quickly as it had declined. So even by 1936, the economy wasn't back to where it was when the Great Depression started. Part of that is consistent with the Cole-Ohanian story about New Deal policies cartelizing both labor and product markets, which reduced potential output. So I think if that hadn't happened and if we hadn't had the 1937-1938 severe downturn (which I think had a lot to do with the Fed doubling reserve requirements and the Treasury sterilizing gold inflows), the economy would have recovered much faster. In fact, it grew very quickly between 1938 and the start of World War II, but we still had unemployment of more than 10 percent. So the war soaked up a lot of that. But much of the growth that had been lost during the Great Depression had already been gained back by the time the United States entered the war.

RF: As you have noted, financial crises tend to result in fairly significant new regulation. Are there some general lessons that we can glean from historical examples?

Bordo: One issue is whether there is policy learning. Do you learn from the mistakes that you made leading up to the crisis? In general, in U.S. history there has been policy learning but it has worked very slowly. In a lot of other countries, there has been virtually no policy learning. They have just gone back to what they were doing before.

The U.S. financial system and regulation have evolved over 200 years and have gone through some very bad moments. For instance, by destroying the Second Bank of the United States in 1836, Andrew Jackson basically removed any serious form of control over financial instability. So there was a great deal of turmoil during the rest of the 19th century. But there was learning that took place because we developed the national banking system, which was an improvement over free banking but it still didn't solve the problem of the lender of last resort, so we invented the Fed. And the Fed was designed to be a great improvement — and it did some good things at the beginning — but in a sense it didn't quite learn from previous mistakes and the Great Depression came along, so it took 25 or 30 years for the Fed to learn to be a lender of last resort. Given that we tend to get something out of each crisis, I suspect we will get something positive out of this crisis, but I don't see it yet.

I have already mentioned many troubling regulations that came out of the Great Depression but one good thing that did emerge was deposit insurance. The FDIC removed the urge for people to panic. But deposit insurance wasn't priced properly, which led to moral hazard. Still, it really was a major innovation, even if it wasn't recognized at the time. I think most policymakers viewed Glass-Steagall and the reform of the Fed as being more important.

RF: Should central banks try to identify and then pop asset bubbles? If so, are they capable of doing so in a socially desirable way?

Bordo: I wrote some papers on that topic about 10 years ago. The first point I would make is that central banks should be wary of their role in fueling asset price booms through expansionary policy. I think what we have learned from the recent crisis is that central bank policy can have a lot to do with contributing to booms, if not necessarily creating them. So I think that's something central banks have to be worried about, and it's a point that the people at the Bank for International Settlements have made, even if they were laughed at for a long time.

In the case of big asset booms that lead to a relatively high probability of large recessions, I think that a case could be made for preemptive policy. But I don't think the Fed should use its main policy tools to defuse an asset price boom. I don't think that the Fed funds rate should be used for something like that. In fact, I am not even convinced

that the Fed should do it at all. I think that an agency like, say, the “Financial Stability Authority” — and I know that such an agency doesn’t currently exist in the United States — should be doing that. In other countries, that is how it is handled. I am concerned about the Fed being pushed to downplay its single most important goal, which is price stability. I think that financial stability policy is a diversion from that.

If you do have a financial crisis, the central bank remains the lender of last resort because it can effectively print money, whereas the Financial Stability Authority could not. So you need to have the two agencies act in close coordination. If it is a true crisis, the Fed should respond very quickly, while keeping in mind its long-run goal. But I don’t think that the Fed acting in a preemptive manner to defuse asset bubbles is in general a good idea.

RF: Historically, how have monetary unions within one nation-state — such as the United States — fared relative to monetary unions involving multiple nation-states?

Bordo: My work with Lars Jonung as well as continuing 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. We looked at the experience of the Latin Monetary Union and the Scandinavian Monetary Union in the 19th century. They lasted awhile, but they lasted only as long as the gold standard was working and, in a sense, there was international harmony. But as soon as World War I hit, they completely fell apart. So the historical evidence is very clear on that one.

The question now is what will happen to the eurozone? It’s a hybrid because they have both unified goods and factor markets and a single central bank with one currency. So they have some of the trappings of a nation-state but they don’t have a

Michael Bordo

► Present Position

Professor of Economics and Director of the Center for Monetary and Financial History, Rutgers University

► Previous Faculty Appointments

University of South Carolina (1981-1989) and Carleton University (1969-1981)

► Other Positions and Professional Activities

National Fellow, Hoover Institution, Stanford University; Member of the Shadow Open Market Committee; visiting scholar at the Federal Reserve Banks of Cleveland and Dallas; former visiting scholar at the International Monetary Fund, Bank for International Settlements, Bank of England, Swiss National Bank, Reserve Bank of New Zealand, Federal Reserve Board of Governors, and Federal Reserve Banks of Richmond and St. Louis; former consultant to the Bank of Canada and the World Bank; and former visiting professor at the University of California at Los Angeles, Carnegie Mellon University, Princeton University, Harvard University, and the University of Cambridge, among others

► Education

B.A. (1963), McGill University; M.Sc. (1965), London School of Economics; and Ph.D. (1972), University of Chicago

► Selected Publications

Author of *The Gold Standard & Related Regimes: Collected Essays* (1999); co-editor of *Credibility and the International Monetary Regime: A Historical Perspective* (with Ronald MacDonald, 2012), *The Defining Moment: The Great Depression and the American Economy in the Twentieth Century* (with Claudia Goldin and Eugene White, 1997), *A Retrospective on the Bretton Woods System* (with Barry Eichengreen, 1993), and *A Retrospective on the Classical Gold Standard, 1821-1931* (with Anna Schwartz, 1984); and author or co-author of papers in such journals as the *American Economic Review*, *Journal of Political Economy*, *Journal of Monetary Economics*, *Journal of Economic History*, and *History of Political Economy*

fiscal union. My reading of history is that unless they go that way, adopt a fiscal union and move more in the direction of one large federal nation-state, they are not going to make it.

RF: What do you think ultimately will happen with the eurozone?

Bordo: In the short run, I think they are going to keep muddling through, although I think Greece is likely to default and there is a good chance it will exit from the euro area. The Greek crisis has to be separated from the other issues. Getting to the rest of it, I think in the near term the system will be saved by European Central Bank (ECB) liquidity, bank recapitalizations, austerity and some structural reforms. But ultimately there could end up being a two-speed euro. In other words, there are really two economies there. There is an advanced economy that is doing quite well and has low labor unit costs, and this includes Germany, Finland, the Netherlands, and possibly Austria, Belgium, and France. And then you have this other Europe that is not doing as well, has high labor unit costs, and is still developing. This would include Portugal, Greece, Cyprus, Malta, and maybe Italy and Spain. Unless they can work out something that would make the real economies of that second group more competitive, I think they may end up splitting into two, with something like a hard euro and a soft euro, which would permit them to potentially be reunited. So I am not terribly optimistic about the euro area as it now stands.

The two-speed euro idea was discussed before the ECB was created. You would have all the advanced countries that would be pegged to Germany. That would be the euro area proper. Then the other countries would have either a peg to, say, Italy, or they could be floating relative to the euro and be in the same situation now as Hungary and other current European Union (EU) members that want to be part of the euro area. They could be permitted into

the euro area if their economies and fiscal situations started to converge with the core countries.

What you need to make the euro project work are: a fiscal union (a euro bond, a euro fiscal authority which can make transfers, and a euro financial authority), a credible no bailout policy (even though such a policy was in the Maastricht Treaty, it has not been followed), and the true operation of free markets through the mobility of labor, capital, and goods. On the last point, they need significant structural change, especially in the labor market. The Germans have done a lot in that regard fairly recently, but most of the other countries still look pretty sclerotic.

RF: You have argued that central banking experienced a “golden age” in the late 19th and early 20th centuries. What were the most important characteristics of central banks during this period? How were they able, on balance, to maintain price stability and effectively serve as lenders of last resort?

Bordo: The key characteristic of that era is that nearly all central banks were on the gold standard and were under the constraints of having to maintain convertibility to gold. Early central banks, such as the Bank of England, also acted to provide government finance, but as time went by they didn’t do much of that. Also, central banks were independent. They were private and they became independent of the fiscal authorities, because if you are on a gold standard rule, you cannot permit big deficits. You will get blown out of the water by capital flight.

What allowed central banks to act as lenders of last resort was credible adherence to the gold standard rule. If the markets believed you were going to stick to gold above all else and keep prices stable, then they would permit you to print money temporarily to deal with a crisis, because when the crisis was over they were confident you would withdraw those funds. Central banks didn’t worry about managing the macroeconomy and they didn’t worry about coordinating with fiscal policy. So that’s what I mean when I call that period the “golden age.”

RF: There is, as you know, a growing movement to change the United States from a fiat money system to the gold standard or some other commodity-based system. What do you think of such proposals? And in today’s world — given the monetary arrangements of other countries, for instance — what would be required to make such a system practicable?

Bordo: Given that the rest of the world wouldn’t go along with the United States in changing to the gold standard, pegging the dollar to the price of gold would lead us to be a sink for global shocks. We would have to absorb all of the shocks to the gold market from the rest of the world which would destabilize prices. And that is not to mention the old problems with the gold standard: that it depends on

the growth rate of the world’s monetary gold stock being equal to growth in the real economy, and if it is less, you will tend to get deflation, which was an issue in the 19th century; and Milton Friedman’s argument about the resource costs of basing money on a commodity that is costly to produce. These reasons argue that we can do better with fiat money if that money is issued under a system of transparent rules.

The good thing about the gold standard is that it gave long-run price stability because there were restrictions on how much gold could be produced, and it constrained the monetary authorities from issuing paper money. They had to keep the ratio between the issue of paper money and the monetary gold stock stable. Moreover, on average, prices were more stable under the gold standard than they have been since we abandoned it. But if a modern central bank were to adopt a credible rule and abandon its discretionary policies, a fiat system can achieve the benefits of the gold standard without the costs.

RF: What are the big unanswered — or understudied — questions in monetary economics and policy, in your view?

Bordo: I think one question that is still important even though a lot has been written about it is how do you set the basic monetary rules in a political environment? For instance, many countries have something like inflation targets, but often they are not followed. How can you set up an incentive-compatible mechanism and make it work? That’s a really big question. A second question is how do you follow a lender of last resort policy without bailouts? I know what Bagehot’s rule says, but how do you do it? A third question is how does the central bank stay clear of fiscal entanglements? It’s one thing to say central banks should not engage in fiscal policy but yet the Fed did just that. So what can you do to prevent that from happening? A fourth question is how do you prevent mission creep? How does a central bank say that it’s going to handle monetary policy but it will not get involved in consumer regulation or financial stability because those things are not their business? A fifth question is how do you get away from New Keynesian Phillips curve thinking and back toward a more quantity theory approach? That might reveal my age, but I think it’s important. And a sixth question is how do you take into account the rest of the world when setting monetary policy? The Fed conducts its policy mainly based on domestic conditions. It generally takes into account international events only when there are big crises. But its policies do affect us through the way they affect the rest of the world. For example, when we keep interest rates lower than other countries, there are capital flows abroad that lead to increases in the money supply in other countries and global inflation, and that comes back and hits us. This seems like something the Fed should be paying more attention to and thinking about in a very systematic way.

RF

ECONOMIC HISTORY

Tar and Turpentine

BY BETTY JOYCE NASH

Tarheels extract the South's first industry

Sturdy, towering, and fire-resistant longleaf pine trees covered 90 million coastal acres in colonial times, stretching some 150,000 square miles from Norfolk, Va., to Florida, and west along the Gulf Coast to Texas. Four hundred years later, a scant 3 percent of what was known as “the great piney woods” remains.

The trees' abundance grew the Southeast's first major industry, one that served the world's biggest fleet, the British Navy, with the naval stores essential to shipbuilding and maintenance. The pines yielded gum resin, rosin, pitch, tar, and turpentine. On oceangoing ships, pitch and tar caulked seams, plugged leaks, and preserved ropes and rigging so they wouldn't rot in the salty air.

Nations depended on these goods. “Without them, and without access to the forests from which they came, a nation's military and commercial fleets were useless and its ambitions fruitless,” author Lawrence Earley notes in his book *Looking for Longleaf: The Rise and Fall of an American Forest*.

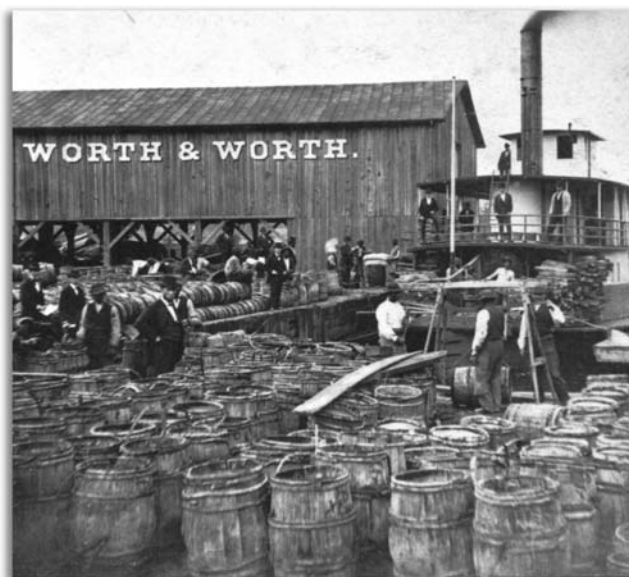
North Carolina seized the opportunity presented by naval stores production; it had the trees, the navigable coastal rivers, and no staple crops — such as Virginia tobacco or South Carolina rice — to crowd out naval stores production. The Tarheels produced so much tar they earned a nickname from the spilled tar that stuck to workers' heels. After the 1720s, the colony dominated the trade in tar and pitch and later, as hundreds of uses were discovered, turpentine.

The naval stores business might never have gotten off the ground had it not been for British demand and incentives Parliament offered.

Gum in a Box

Early sea captains, on a reconnaissance trip to North Carolina, described the pines to Sir Walter Raleigh in 1584 as “trees which could supply the English Navy with enough tar and pitch to make our Queen the ruler of the seas.” Likewise, the governor of the future Lost Colony reported on Roanoke Island's abundance in rosins and pitch. And in 1608, a group of Polish tar-burners was dispatched from Britain to teach their craft to Jamestown settlers. British trading partners were often mired in disputes and wars, but naval stores were critical to keep trade flowing and the empire growing. Having exhausted their own forests, the British needed an affordable and reliable supply.

By the end of the 17th century, the only significant tar production centered around Elizabeth City, N.C.: 1,200



Wilmington, N.C., was a hub for the naval stores industry. This photograph depicts barrels at the Worth and Worth rosin yard and landing in 1873.

barrels in 1698. To stimulate naval stores production, in 1704 Britain offered the colonies an incentive, known as a bounty. Parliament's “Act for Encouraging the Importation of Naval Stores from America” helped defray the eight-pounds-per-ton shipping cost at a rate of four pounds a ton on tar and pitch and three pounds on rosin and turpentine. Goods could only travel aboard British or British colonial ships. “The British had to pay that premium to even get production to begin,” says Louisiana State University historian Robert Outland, author of *Tapping the Pines*, a history of the Southern naval stores industry.

The British had aimed the bounty mainly at New England, to divert industry there from the woolens that competed with Britain's, but the region had depleted its pine forests by the 17th century. In contrast, the Southeast's supply seemed unlimited. The Southern longleaf yielded even more resin, also known as gum.

As settlers spread throughout North Carolina's coastal Cape Fear Valley and its network of waterways, naval stores production expanded. With slave labor, landowners worked crops in the spring and summer and made tar in the winter.

England soon imported enough naval stores to sell the excess to Holland, Flanders, Germany, Spain, Portugal, and Ireland. But the British Navy objected to a shipping subsidy, and the product was poor by European standards. After Britain briefly dropped the subsidy, naval stores exports to Britain fell by 60 percent, eroding the shipping business the subsidy had generated. Parliament subsequently renewed the Bounty Act regularly, for the last time in 1758.

Tar and pitch dominated exports. To obtain tar, producers “sweated” the liquid from resin-filled fallen timber by slow-burning the wood in a sloped pit, with a barrel at the bottom.

Naval stores production grew and so did the uses for them, especially turpentine. It waterproofed cloth and leather and was believed to cure ailments, clean carpets, and repel fleas, among hundreds of other uses. Workers harvested gum from which turpentine and rosin are distilled. (Gum is the sticky substance exuded by living trees as a natural insecticide.) Workers cut into the trees — four inches deep — and collected the gum in a box. John Brickell's *Natural History of North Carolina*, describes that process in 1737: "The Planters," he writes, "make their Servants or *Negroes* cut large Cavities on each side of the *Pitch-Pine Tree* (which they term *Boxing of the Tree*) wherein the *Turpentine* runs, and the *Negroes* with Ladles take it out and put it into Barrels." The deep cuts weakened trees, making them disease-prone; forestry practices in 19th century France would prove superior.

England imported 135,000 barrels of tar, pitch, and turpentine from the colonies in 1768 — 60 percent of which, mostly tar, came from North Carolina. Naval stores were the colony's number-one export, and most of it departed through the port at Wilmington.

But the market for naval stores changed with independence. Shipping subsidies ended, though North Carolina found markets in other countries and colonies. Exports to Britain plummeted from 87,152 barrels in 1774 to 216 in 1777. After the Revolution, Tar Heel exports revived, with the New England states as the chief customers. North Carolina remained the biggest producer for much of the 19th century.

Few profitable alternatives existed, except a small rice-growing region near Wilmington and the tobacco that grew in its eastern river bottomlands. Frederick Law Olmsted, journalist, public administrator, and chief landscape designer of New York City's Central Park among other projects, writes, in *Journey in the Seaboard Slave States*, that "in the region in which the true turpentine-trees grow, indeed, there is no soil suitable for growing cotton; and it is only in the swampy parts, or on the borders of streams flowing through it, that there is any attempt at agriculture."

Over the next century, North Carolina would produce nearly all North American naval stores. The biggest growth emerged from turpentine.

Turpentine Frenzy

After the Revolution, demand for naval stores grew, particularly for turpentine and rosin, the two valuable products separated in the distillation process. Rosin was widely used in soap production and to prevent rot, but tar and pitch still dominated, so essential were these products in shipbuilding and maintenance. By the 1830s, turpentine was used in a camphene mixture for lamp oil until kerosene displaced it. Still other uses sprang up: Rubber manufacturing in the 1830s increased demand for turpentine as a solvent, adding to the product's value. The industry expanded in the 1840s and 1850s and created prosperity in eastern North Carolina as planters expanded production. Sample newspaper advertisements for the sale of operations show that while

the average business in the 1840s consisted of about 25,000 boxes, by the 1850s, the typical operation made use of 85,000 boxes. The expansion also drove up land values. Turpentine prices went up and cotton prices fell. Some farmers put in turpentine boxes and quit growing cotton.

Added production brought more local distilleries to process the raw turpentine, especially in port towns. The *Wilmington Chronicle* reported in 1846: "The distilling business has in fact become a great interest here, one almost equal in importance to any other."

The growing industry got a boost from the expanding railroad networks. Not only could planters, and later loggers, penetrate virgin forests, they could also schedule deliveries. The North Carolina General Assembly in 1849 chartered the North Carolina Railroad Co., which still owns and manages the 317-mile corridor between Morehead City, N.C., on the coast, and Charlotte, in the Piedmont.

The turpentine boom also attracted more people. Cumberland County, a center of production in the early 1850s, attracted 300 whites in January 1853, according to the *Fayetteville Observer*. The newcomers brought 700 slaves. Even the added coerced labor force was apparently insufficient to keep pace with demand, however, as labor costs rose. Some planters hired out their slaves to turpentine producers.

Naval stores slaves worked under a task system, in multi-unit groups in the warm months when trees produced resin. Olmsted wrote that in 1855, an overseer had "ten hands dipping + six hands getting timber, seven hands at the cooper shop, five hands at the still, one hand cutting wood, and three wagoning." But it was tough, lonely, dangerous work, in which slaves were often separated from families. Slaves were put up in crude lean-tos, according to Outland. Distillery fumes and the sticky gum could impair brain and skin, and ticks, chiggers, and snakes further burdened the laborers.

By 1860, naval stores were the third-biggest Southern export, behind cotton and tobacco. North Carolina produced 97 percent of the naval stores made in the United States. Though the longleaf forests already were in decline, in 1860 the total value of crude and distilled turpentine reached \$5.3 million, 32 percent of the state's manufacturing output. Lighter copper stills, though expensive compared to the heavy iron previously used, allowed production to burrow deeper into forests. North Carolina shipped out 90 percent of its tar and turpentine, according to historian David Carlton of Vanderbilt University.

Naval stores continued to form the South's backbone even after the war. Jim Gillis, 95, of Soperton, Ga., is a veteran turpentine operator; his grandfather started Soperton Naval Stores in 1880. Gillis notes that after the Civil War, cotton and naval stores dominated agricultural production in Georgia.

The Pines, Postbellum

In 1866, North Carolina exported 57,000 casks of turpentine. Demand grew, and so did costs of production,

particularly wages, which ate up 52 percent of operating expenses. Harvest methods remained largely unimproved, Outland observes, because the South had failed to develop an indigenous base of mechanics and engineers who could improve the industry's technology.

Though production revived in North Carolina after the Civil War, producers sought fresh forests farther south: South Carolina led production in 1879, Georgia in the 1890s, and Florida in the 1910s.

Post-World War I lumber production in North Carolina depleted its remaining pines which, before the iron rails, had grown too far inland to allow efficient naval stores production. The destruction of the pines mirrors the plantation economy. As soils were worn into infertility, it was "not at all uncommon for plantation owners to shut down operations in the former British colonies, sell it off, pack up slaves and move to fresher land in the Deep South," Outland says.

Though 21 percent of Tarheel lumber was exported, the business lasted only as long as the trees. In the meantime, North Carolina began fabricating a finished wood product: furniture. At the turn of the 20th century, High Point, N.C., had 26 small furniture factories. Nearby Thomasville and Lexington had 14 more.

From 1880 to 1920, lumber production in the South grew tenfold, partly due to wartime demand. Major James Coker of Hartsville, S.C., successfully made paper from soft wood pulp, in 1884, further intensifying the demand for pine and the land on which it grew.

Nonetheless, wages stayed low, about 80 cents a day in the late 19th century, for a 12- to 14-hour day. "The camps' isolation and lack of transportation to the nearest town ensured that most workers traded at the commissary," according to Outland. Most operators paid in scrip, redeemed at a commissary, often for 70 cents on the dollar. This contributed to a debt-peonage system. Though federally outlawed in 1867, the practice of keeping workers through debt owed to owners was not uncommon, according to historians.

Restrictive codes governing black people persisted well into the 20th century, and made it easy for employers to control a large segment of the labor force. Enticement acts prevented employers from hiring workers away from other operators; emigrant-agent laws imposed fees on agents who tried to move workers between states; and vagrancy laws criminalized any failure of black workers to sign and stick to labor contracts. Isolated camps could also breed brutality that could go unchecked, according to

Outland and others. Convicts were also used to work timber and turpentine.

The Resource Curse

At the end of the 19th century, the demand for rosin, particularly, blossomed along with the nation's nascent chemical business. At its peak in 1908-1909, the gum naval stores industry produced 750,000 barrels of turpentine and 2 million drums of gum rosin, which went into hundreds of products — paints, varnishes, lacquer, and paper production. Without rosin, for instance, paper couldn't hold its shape. In 1907, a chemist in a Michigan plant developed a method to wring turpentine and rosin from wood stumps, instead of from the gum that had previously been tapped from trees. This further industrialized the naval stores industry. Large distillation plants and alternative techniques for producing naval stores eventually displaced, throughout the 20th century, the backwoods turpentine distillers and operators.

Historians today suggest that this extractive, migratory industry hamstrung the region's economic development over the longer term, even though industry leaders may have been making rational business decisions at the time. "Everywhere you see the naval stores industry, it seems to center in areas that were poor, and when it leaves, it leaves those areas poor," Outland says. "When you look at North Carolina before the Civil War or South Carolina and Georgia after the Civil War, while the production is going on, the area seems to be generating decent revenue. In their wake, they leave nothing behind. There's no economic development, there are no businesses spun off from these backwoods operations."

Pine chemicals today remain big business. Among the producers is a division of MeadWestvaco in Charleston, S.C., which refines another gum product, tall oil, from its pulp mills to make inks and adhesives as well as lubricants and other industrial products.

Naval stores production and timbering exploited and exhausted the trees from which those industries grew. In the 20th century, efficient technology and modern forestry management replaced the crude destruction. But the longleaf forests have largely disappeared from the landscape. It takes a long time to grow a longleaf.

Naval stores left another mark, though, one still visible in some Southeastern forests: the V-shaped streaks cut into the trees and known as "cat faces," from which flowed the essence of the South's first industry. **RF**

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Manufacturing in the Fifth District: Assessing Its Role During the Great Recession

BY ROBERT H. SCHNORBUS

The manufacturing sector offers many potential benefits to a regional economy. Jobs are the most obvious. The arrival of major manufacturing facilities, such as the Boeing aircraft plant in South Carolina recently and the opening of auto assembly and supplier plants in the Fifth District and throughout much of the South over the last decade, has caused understandable excitement — both for states seeking new tax revenues and for workers seeking better jobs. Yet manufacturing jobs, especially in auto-related industries, are also notoriously cyclical. Indeed, the expansion of manufacturing industries that are highly cyclical may actually compound the Fifth District's total employment losses during recessions. How problematic was the total employment decline in the manufacturing sector during the recent recession for those states with high concentrations of manufacturing employment?

States that have an above-average concentration of their employment in manufacturing, relative to the nation, typically have some comparative advantage that attracts the industry to the region such as access to markets, raw materials, or workers with desired skills. In the case of the Fifth District and the South in general, they seem to be attracting new industries (most notably the auto industry, but also aerospace, pharmaceuticals, and other relatively high-tech industries) that are replacing at least some of the older industries which have been declining over the years (such as textiles, apparel, and furniture). However, looking at employment and industry specialization data shows that states in the Fifth District — and, indeed, throughout the

South — with more specialized manufacturing industries saw greater employment declines during the last recession.

Manufacturing Trends in the South

Over the last 30 years, there has been impressive economic growth throughout the South, as population and jobs have shifted away from the Northeast and Midwest. The population of the region as a whole has nearly doubled since 1970, with a growth rate about 40 percent faster on average than the nation as a whole. Over that period, its share of the nation's population has risen from less than 22 percent to just over 25 percent, and its per capita income has increased rapidly to a level nearly equaling the national average.

People have been drawn to the region for a variety of reasons, perhaps most importantly for its job opportunities — many of which over the years have been in manufacturing. Indeed, the migration of manufacturing jobs to the South has been part of a natural cycle of regional growth and development, as production processes in one region move out of their formative stages toward maturity and firms seek lower-cost regions where they can increase their profitability and competitiveness by lowering their production costs. The South has long benefited from such a cycle as, for example, textile and apparel industries left the North and settled in the South — often moving later offshore as cost advantages emerged in other countries. As textile and other jobs left the South, they were often replaced in recent decades by more skilled manufacturing jobs that were leaving the Midwest, helping to raise incomes and the standard of living throughout the South.

About the Analysis

The South is defined here to include the 12 states comprising the Census Bureau's South Atlantic and East South Central regions. The West South Central region, which includes Arkansas, Louisiana, Texas, and Oklahoma, is excluded from the analysis because it has a much larger energy sector and is less closely related to economic trends in the Fifth District.

Although part of West Virginia is not within the Fifth District, analyses of the Fifth District in this article include all Fifth District states (Maryland, North Carolina, South Carolina, Virginia, and West Virginia) in their entirety. The District of Columbia, which is also part of the Fifth District, is excluded from the analyses of both the South and the Fifth District on account of the limited manufacturing activity that takes place there.

High-tech industries are often defined as any industry at the four-digit NAICS code level in which employment in technology-oriented occupations account for a proportion of that industry's total employment that is

at least twice as great as the 4.9 percent average for all industries. Since industries in this analysis are considered only at the three-digit industry level, a high-tech status was given to any three-digit industry that contained one or more of the officially designated four-digit high-tech industries.

For example, the high-tech classification for Aerospace Product and Parts Manufacturing (NAICS code 3364) is transferred to the more aggregated Transportation Equipment Manufacturing (NAICS code 336). While the three-digit industries may include other industries that do not meet the four-digit rule, they are assumed in this analysis to be more likely to reflect high-tech industry behavior than industries that do not contain any four-digit high-tech industries. (For the complete classification of high-tech industries, see "High-tech employment: a NAICS-based Update," *Monthly Labor Review*, July 2005.)

That shift of employment to new industries in the South might be expected to create some cushion to a recessionary downturn, compared to the older, more mature industries they were replacing (many of which might simply go out of business during a recession). As it turns out, however, the changing specialization within manufacturing may have only amplified the effects of the recent recession on the South and particularly the Fifth District.

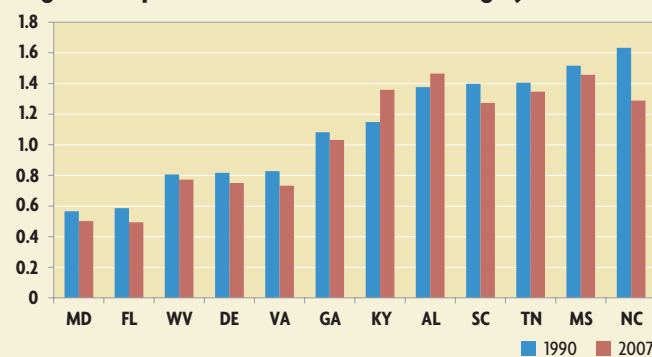
A region's concentration in a particular industry relative to the national average, often defined as its "degree of specialization," is measured by the ratio of the share of the region's total employment in that industry to the share in the nation as a whole. Any region with a higher share than the nation is considered to be relatively specialized in that industry. (See chart.) For example, about 14 percent of the Fifth District's total employment in 2000 (just as the decline in manufacturing was beginning to accelerate) was in its manufacturing sectors, compared to 13 percent for the nation — a small, but still notable, difference for a fairly large region. Technically, the degree of specialization, or the ratio of the Fifth District's share of manufacturing to total employment, was 1.05. In the South as a whole, manufacturing's degree of specialization was 1.01 — still somewhat specialized, but much less than in the Fifth District. However, the specialization of individual states within the Fifth District, as well as other southern states, shows much greater variation than suggested by either region as a whole. For example, North Carolina in 2007 had the highest specialization in the South (1.48), and Maryland had the lowest (0.54). In most cases, specialization in manufacturing among states in the South has been declining since 1990, the exceptions being Kentucky and Alabama. That specialization in manufacturing can then be tied to the effect of the last recession on total employment in each of the states in the Fifth District and the South.

Specialization and the Great Recession

Given that the manufacturing sector is inherently cyclical, large losses in manufacturing output and jobs during recessions should not be surprising. Indeed, during the last recession, nearly half of a total decline in GDP between 2007 and 2009 was attributed to manufacturing output losses. Manufacturing output was only 13 percent of GDP in 2007, but its contribution to the recession was well over three times its share of the economy. In the case of manufacturing employment, nationally it accounted for 10 percent of total employment in 2007, but accounted for 27 percent of the total employment losses during the recession — less of a contribution than in the case of output, but still significant. The difference between the two measures could again be a reflection of the role of technological changes and increased productivity over time that allows output to grow at a faster pace than employment in manufacturing.

From a regional perspective, both the Fifth District and the South overall have tended to be slightly more cyclical with respect to their total employment and slightly less

Degree of Specialization in Manufacturing by State



SOURCE: Bureau of Economic Analysis, Federal Reserve Bank of Richmond

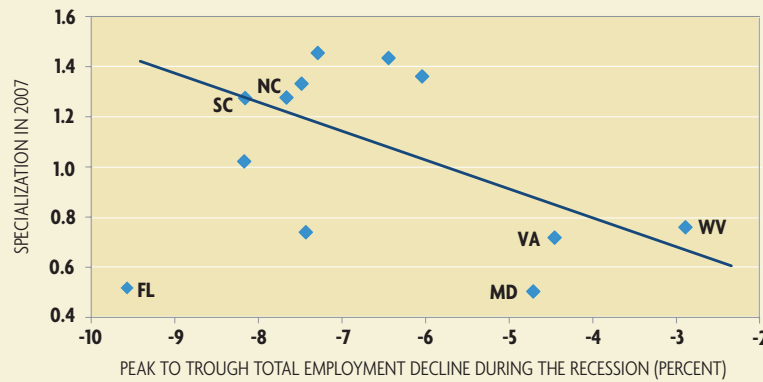
cyclical with respect to manufacturing employment than the nation on average over the last several recessions, adjusting for relative size differences and underlying trend over time to focus on just the cyclical component of employment.

As with their differences in specialization, individual states within the Fifth District exhibited a much wider variation in cyclical sensitivity, as measured by the magnitude of their employment swings in employment from peaks to troughs during the last three recessions. For example, both North and South Carolina tended to have much greater cyclicity in both total and manufacturing employment, while Maryland and West Virginia were actually much less cyclical than the nation. Virginia tended to experience cyclical swings in both their total and manufacturing employment that were similar to the nation. Since each state had different degrees of specialization in their manufacturing sectors, this variety offered an interesting comparison of the relationship between specialization in manufacturing and the impact of recessions in the region.

Based on the experience over the last recession, a clear pattern of a higher degree of specialization in manufacturing being associated with deeper total employment losses was evident among all five states in the Fifth District. (See top chart on page 50.) The relationship that emerges is statistically significant when measured across all states in the South, with one exception: Florida has only about 5 percent of its employment in manufacturing, or less than half the national average, but experienced a particularly harsh recession. Florida, along with California, Arizona, and Nevada, was one of the major centers of the housing crisis during the recession, and that may have amplified the impact of the recession compared to other states in the region.

This relationship between specialization and cyclicity does not hold true across all states in the nation or for all recessions, but seems to be consistently true of the South over the last three recessions. Indeed, if the states in the West South Central region are included in the analysis (and most of them are highly specialized in manufacturing), the relationship between specialization in manufacturing and total employment decline during the last recession breaks down, perhaps due to the spillover effects from a booming

Relationship Between Employment Loss and Degree of Specialization During the Recession



NOTE: Florida is not included in calculation of best-fit line.
SOURCE: Bureau of Economic Analysis, Federal Reserve Bank of Richmond

energy sector on total employment in states such as Texas. Also, the relationship failed to hold up for the South in the recession in the early 1980s — the only recession to rival the last recession in intensity of both output and employment decline. The relationship was present, however, for the South in both the 1990-91 and 2000 recessions. Thus, the pattern observed in the last recession is not unusual for the region, at least over the last three recessionary periods, even as specialization declined among most states in the region.

Specialization in North Carolina and Virginia

North Carolina and Virginia, two states of approximately equal employment size, provide an opportunity to look in more depth at the role of the manufacturing sector over the last recession. Both are quite different in the degree to which they are specialized in manufacturing employment — North Carolina being fairly highly specialized and Virginia not being specialized on average. And both have different cyclical patterns in employment — North Carolina being much more cyclical than Virginia, especially during the last recession. (See adjacent chart.) Indeed, North Carolina, not surprisingly, experienced a much larger percentage decline in total employment during the recession than Virginia (-7.7 percent and -4.5 percent, respectively). As with the region as a whole, the difference in specialization in manufacturing between the two states was associated with significantly different rates of decline in total employment during the last recession.

To get more insight into the relationship between specialization in manufacturing and employment decline, the research department of the Richmond Fed took a closer look at selected manufacturing industries in the two states. Industries within the manufacturing sector were selected from two categories: first, those experiencing the greatest increase in the degree of their specialization between 1990 and 2007 (before the onset of the last recession), and second, those experiencing the greatest decrease during that period. The top five industries in each category were included from each state.

Many factors could account for these changes in special-

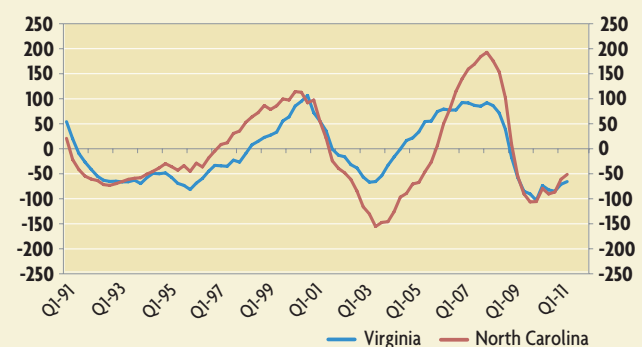
ization, as each state underwent shifting comparative advantages that may have attracted or driven away employment in these industries. But since each industry has a fairly consistent pattern of response to business cycle fluctuations over time, it is possible to gain insight into their contribution to changes in manufacturing employment in the region during the last recession.

To make comparisons among the specific industries within manufacturing, it is helpful to differentiate them using three classifications. The first is whether the industry was already specialized or not, to determine its relative importance to the state's economy. The second is whether the industry was more or less cyclical than manufacturing on average at the national level, to

determine if it was increasing or dampening the decline in employment during recessions relative to other manufacturing industries. The third is whether the industry was more or less likely to contain high-tech manufacturing firms, in order to determine if the attraction of high-tech firms might be related to differences in the cyclical behavior of total employment in the two states. (See table.)

While these classifications are somewhat subjective and the sample is limited to only the top five industries in each category, the results indicate a clear tendency for movement toward industries with greater cyclicity among the selected industries in North Carolina. For example, of the five industries in North Carolina that were increasing their degree of specialization, three had above-average cyclicity. However, among the five industries that were decreasing their specialization and thus becoming relatively less important, three had below-average cyclicity. In other words, manufacturing in the state was moving toward at least some industries that would have a tendency to increase the impact of recessions on the state and away from industries that might help dampen the impact. In Virginia, both those industries that were increasing and those that were decreasing their specialization tended to have below-average cyclicity. Thus, the effects of change on that state as a

Comparison of Cyclicity of NC and VA Total Employment, Detrended (in thousands)



SOURCE: Bureau of Economic Analysis, Federal Reserve Bank of Richmond

whole may have been offsetting, keeping the state's cyclicity relatively low.

In both states, the industries that were increasing their degree of specialization were not industries in which the states were already specialized. The lack of a high concentration of employment in such industries somewhat reduces their importance to the cyclicity of the state's employment. In contrast, the industries that were becoming less specialized and thus less important were industries in which both states were specialized; in all but one case, they were the same industries in each state — tobacco, furniture, apparel and textile mills, or the industries with which both states have been traditionally associated. Again, while the sample of industries is limited, the trend of the states away from their old manufacturing base was evident. Since these industries have below-average cyclicity, it suggested a tendency for these changes to contribute to the states becoming more vulnerable to recessions.

Finally, a pattern of change among industries classified as high-tech was also suggested from the comparison of the two categories of industries. In North Carolina, the industries that were increasing their specialization in the state tended to have at least some link to high-tech industries. The industries that were losing importance, however, tended to be more closely linked to industries that are not high-tech. Since these high-tech industries were also associated with industries with above-average cyclicity, they seemed on balance to be increasing the state's exposure to the business cycle. At the same time, industries that were becoming less specialized were the ones that tended to be less cyclical. Again, the shift among industries seemed to be favoring increasing the overall cyclicity of the state. In contrast, both the industries that were becoming more important and less important in Virginia tended not to be classified as high-tech. As such, the shifting of industries in terms of their relationship to technology again appeared to be less important than in North Carolina. Overall, the biggest changes in Virginia were coming from industries that seemed to be relatively stable, which might help explain in part why Virginia's total employment was less cyclical than North Carolina's.

Implications for the Next Recession

While many factors contribute to the cyclical behavior of any specific industry or an entire manufacturing sector in a region, two key points emerge from the analysis above with respect to the Fifth District and the South as a whole. First, while manufacturing employment over time has become a smaller share of the national and regional economy, states with above-average specialization in manufacturing were likely to experience more severe recessions. That relationship seemed to hold true over time, even as the degree of specialization in manufacturing declined among most states in the region. Second, the new, more high-tech manufacturing industries toward which the Fifth District tended to be

Top 5 Manufacturing Industries in NC and VA in Terms of Increasing vs. Decreasing Specialization

	Specialized in 2007	Highly Cyclical	High-Tech
North Carolina — Increasing Specialization			
Paper manufacturing	•		
Other transportation equipment mfg		•	•
Chemical manufacturing	•		•
Fabricated metal product mfg		•	•
Motor vehicles and parts mfg		•	•
North Carolina — Decreasing Specialization			
Apparel manufacturing		•	
Beverage and tobacco product mfg	•		
Furniture and related product mfg	•	•	
Textile mills	•		
Textile products	•		
Virginia — Increasing Specialization			
Paper manufacturing			
Textile products			
Wood product manufacturing	•	•	
Machinery manufacturing		•	•
Petroleum and coal products mfg			•
Virginia — Decreasing Specialization			
Apparel manufacturing		•	
Beverage and tobacco product mfg	•		
Furniture and related product mfg	•	•	
Textile mills	•		
Chemical manufacturing			•

NOTE: "High-Tech" designation derived from BLS studies identifying high-tech industries.
SOURCE: Bureau of Economic Analysis, Bureau of Labor Statistics, Federal Reserve Bank of Richmond

migrating showed a tendency to increase the relationship between specialization in manufacturing and the impact of recessions.

Again, the expansion of the automotive industry in the Fifth District and the South in general may be a good example of states that are moving toward more cyclically sensitive industries. The fact that this industry was also one of the hardest hit by the recent recession helps explain some of the difference in total employment losses among states. Indeed, virtually all of the states in the South that are most closely associated with the automotive industry and its supplier base (i.e., Alabama, North Carolina, South Carolina, and Tennessee) experienced more severe declines in total employment than the South on average during the last recession. (Only Kentucky managed to fare somewhat better than the region on average.) These new industries may bring with them higher paying jobs, but they may also have a greater tendency to cut employment in hard times.

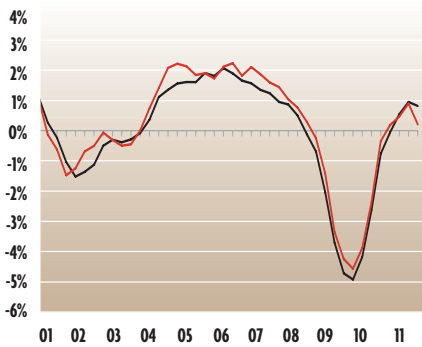
Whatever the exact causes, the changing industry specialization in the Fifth District is bringing both advantages and disadvantages to the regional economy. Obviously, more work needs to be done to obtain deeper insights into the causes of the changes that occurred over the last three recessions, but an initial look at the data suggests that the Fifth District and, perhaps, the entire South may be facing a mixed blessing as its manufacturing base expands — more employment during good times combined with greater exposure to total employment declines during recessionary periods. Yet on balance, the District's manufacturing base is growing and evolving, and that is good for the entire region as standards of living improve, even if the price may be greater exposure to the effects of recessions. **RF**

State Data, Q2:11

	DC	MD	NC	SC	VA	WV
Nonfarm Employment (000s)	713.3	2,514.5	3,881.0	1,821.5	3,653.8	751.9
Q/Q Percent Change	-0.2	0.1	0.1	0.4	0.2	0.4
Y/Y Percent Change	-0.2	-0.4	0.1	0.7	0.4	0.7
Manufacturing Employment (000s)	1.2	113.4	434.4	214.1	233.3	49.6
Q/Q Percent Change	0.0	1.1	-0.1	1.9	1.0	0.5
Y/Y Percent Change	-7.7	-1.6	0.5	3.3	0.7	0.8
Professional/Business Services Employment (000s)	151.0	392.4	497.8	224.1	664.6	63.0
Q/Q Percent Change	1.2	0.8	0.7	1.1	0.7	0.9
Y/Y Percent Change	2.0	1.6	3.9	5.1	2.8	4.2
Government Employment (000s)	247.3	497.0	688.7	334.1	704.0	149.6
Q/Q Percent Change	-0.9	-0.5	-0.9	0.0	0.1	-0.2
Y/Y Percent Change	0.0	-1.4	-3.7	-5.0	-1.0	-3.0
Civilian Labor Force (000s)	334.0	2,989.9	4,498.2	2,155.1	4,204.5	782.1
Q/Q Percent Change	0.1	0.4	0.6	0.0	0.4	0.0
Y/Y Percent Change	-0.5	0.3	-0.9	-0.5	0.4	-0.1
Unemployment Rate (%)	9.9	6.9	9.8	10.1	6.0	8.6
Q1:11	9.5	7.1	9.8	10.2	6.4	9.4
Q2:10	9.9	7.4	10.8	11.2	7.0	8.8
Real Personal Income (\$Mil)	39,137.8	261,403.4	306,829.3	138,523.6	326,472.6	54,261.6
Q/Q Percent Change	0.4	0.4	0.3	0.4	0.2	0.4
Y/Y Percent Change	2.7	2.4	1.9	2.3	2.3	2.0
Building Permits	717	2,801	8,673	4,132	5,458	460
Q/Q Percent Change	0.4	16.0	2.4	15.8	-6.5	26.4
Y/Y Percent Change	2212.9	-19.3	-10.0	4.4	-4.2	-20.7
House Price Index (1980=100)	572.7	408.7	306.2	308.7	396.4	213.5
Q/Q Percent Change	2.3	-1.8	-1.7	-2.5	-1.2	-2.8
Y/Y Percent Change	2.2	-4.6	-3.9	-4.0	-2.9	-0.0
Sales of Existing Housing Units (000s)	9.2	76.0	135.6	70.0	104.0	25.2
Q/Q Percent Change	-8.0	-7.8	-3.7	2.3	-7.5	-11.3
Y/Y Percent Change	-11.5	-12.8	-17.1	-17.5	-11.9	-12.5

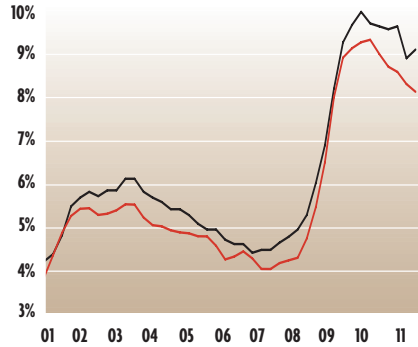
Nonfarm Employment

Change From Prior Year
First Quarter 2001 - Second Quarter 2011



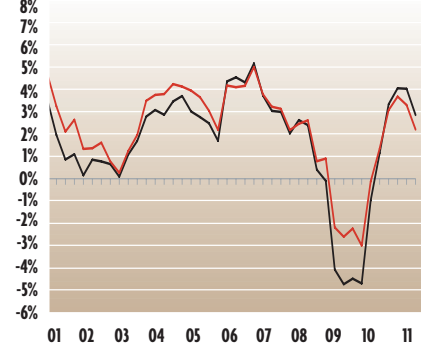
Unemployment Rate

First Quarter 2001 - Second Quarter 2011



Real Personal Income

Change From Prior Year
First Quarter 2001 - Second Quarter 2011

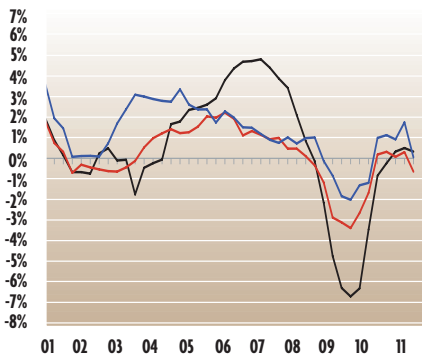


— Fifth District

— United States

Nonfarm Employment Metropolitan Areas

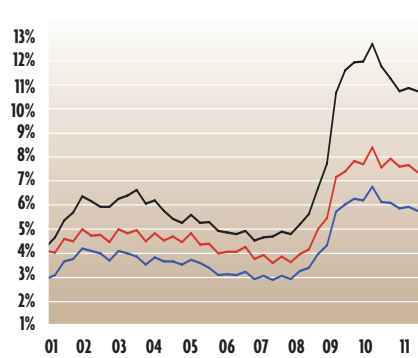
Change From Prior Year
First Quarter 2001 - Second Quarter 2011



— Charlotte — Baltimore — Washington

Unemployment Rate Metropolitan Areas

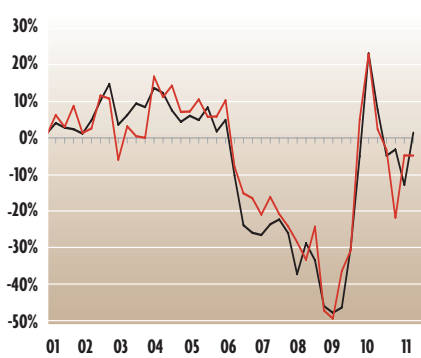
Change From Prior Year
First Quarter 2001 - Second Quarter 2011



— Charlotte — Baltimore — Washington

Building Permits

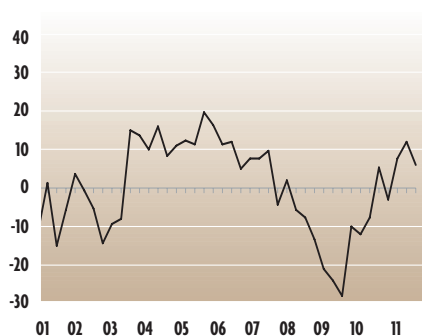
Change From Prior Year
First Quarter 2001 - Second Quarter 2011



— Fifth District — United States

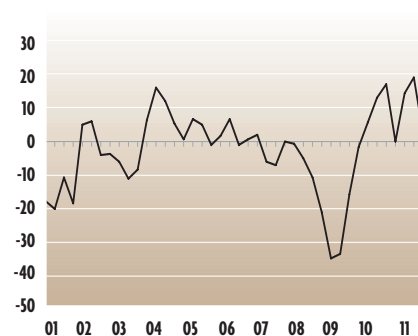
FRB—Richmond Services Revenues Index

First Quarter 2001 - Second Quarter 2011



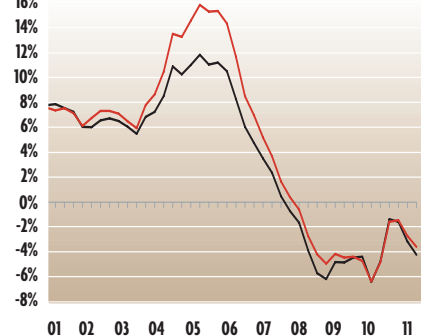
FRB—Richmond Manufacturing Composite Index

First Quarter 2001 - Second Quarter 2011



House Prices

Change From Prior Year
First Quarter 2001 - Second 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, Q2:11

	Washington, DC	Baltimore, MD	Hagerstown-Martinsburg, MD-WV
Nonfarm Employment (000s)	2,420.9	1,278.2	96.7
Q/Q Percent Change	1.1	2.3	1.2
Y/Y Percent Change	0.0	-0.6	-1.5
Unemployment Rate (%)	5.7	7.4	9.3
Q1:11	5.8	7.5	9.7
Q2:10	6.2	7.8	9.7
Building Permits	4,348	905	141
Q/Q Percent Change	4.6	-16.1	12.8
Y/Y Percent Change	37.7	-31.1	-48.0
	Asheville, NC	Charlotte, NC	Durham, NC
Nonfarm Employment (000s)	167.8	808.2	281.8
Q/Q Percent Change	1.9	1.3	1.0
Y/Y Percent Change	0.1	0.3	0.1
Unemployment Rate (%)	7.8	10.5	7.2
Q1:11	7.9	10.6	7.1
Q2:10	8.7	11.8	7.9
Building Permits	285	1,568	546
Q/Q Percent Change	-0.7	9.7	19.7
Y/Y Percent Change	-26.7	-7.9	8.1
	Greensboro-High Point, NC	Raleigh, NC	Wilmington, NC
Nonfarm Employment (000s)	341.8	506.0	137.3
Q/Q Percent Change	1.8	1.3	2.4
Y/Y Percent Change	0.4	1.8	-1.1
Unemployment Rate (%)	10.1	7.8	9.7
Q1:11	10.2	7.8	9.5
Q2:10	11.3	8.8	10.4
Building Permits	412	2,132	452
Q/Q Percent Change	-36.5	95.1	16.2
Y/Y Percent Change	-20.5	36.1	-23.0

	Winston-Salem, NC	Charleston, SC	Columbia, SC
Nonfarm Employment (000s)	206.3	288.7	344.6
Q/Q Percent Change	2.1	2.0	1.0
Y/Y Percent Change	0.4	1.1	-0.3
Unemployment Rate (%)	9.3	8.6	8.7
Q1:11	9.3	8.4	8.5
Q2:10	10.2	9.3	9.2
Building Permits	337	1,030	780
Q/Q Percent Change	67.7	43.3	-0.8
Y/Y Percent Change	7.7	39.0	-7.4
	Greenville, SC	Richmond, VA	Roanoke, VA
Nonfarm Employment (000s)	297.5	599.5	155.7
Q/Q Percent Change	0.8	0.8	2.5
Y/Y Percent Change	0.4	-1.3	-0.3
Unemployment Rate (%)	8.5	6.8	6.4
Q1:11	8.5	7.2	6.9
Q2:10	9.7	7.7	7.3
Building Permits	494	765	101
Q/Q Percent Change	14.6	25.4	-5.6
Y/Y Percent Change	30.3	-25.7	-27.9
	Virginia Beach-Norfolk, VA	Charleston, WV	Huntington, WV
Nonfarm Employment (000s)	739.5	151.0	114.7
Q/Q Percent Change	2.8	3.3	1.8
Y/Y Percent Change	-0.2	2.0	-0.1
Unemployment Rate (%)	6.8	7.9	8.5
Q1:11	7.0	8.8	9.3
Q2:10	7.4	7.7	8.4
Building Permits	1,175	31	29
Q/Q Percent Change	1.5	29.2	625.0
Y/Y Percent Change	1.1	-8.8	262.5

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No Quick Fix for the Housing Market

BY JOHN A. WEINBERG

In most U.S. business cycles of the last 60 years, housing has led the way. Typically, residential investment falls before the peak in broader economic activity, and begins to rebound — usually quite sharply — before the trough. In this cycle, the pattern held up near the top of the cycle — residential investment peaked in late 2005 while the business cycle peak was in the fourth quarter of 2007. But at the bottom, things have been quite different this time around. The recession ended in the middle of 2009, but residential investment continued to decline through most of 2010 and has shown very little growth since then. Other indicators of housing activity — home sales and prices — have continued to indicate a depressed residential sector.

This historically atypical behavior of housing has led some to conclude that a more robust recovery of housing markets is a necessary precondition for a robust economic recovery more broadly. And the economic recovery has indeed been disappointing for going on three years now. But from a strictly arithmetic point of view, the slow recovery in housing doesn't seem to be able to explain the performance of the broader economy. In other words, there are other factors at play that also are keeping the economy from growing more rapidly.

Of course, the performance of the housing market affects consumer spending. During the housing boom, many people used their growing housing wealth — tapped through home equity lines of credit, for instance — to finance spending on an array of goods and services. The subsequent bust in home prices not only deprived households of this source of consumption growth, but also placed many in a financial hole, owing more on their houses than they are worth at current prices. Indeed, there is evidence that consumption has been particularly weak in areas that experienced large house price declines and where homeowners were particularly leveraged.

The financial distress brought on by falling home prices also means that the number of houses at some stage of the foreclosure process or already owned by the bank has reached very high levels. This has placed stress on the ability of financial institutions and the legal system to deal with the flow of troubled mortgages. It has also resulted in a large and growing inventory of foreclosed properties available for sale, many of them vacant.

This inventory of houses — both those that are in various stages of the foreclosure process and those that are bank owned — has made it difficult for markets to clear quickly. Houses for sale remain for sale longer, and prices adjust more slowly. With this process moving slowly, people in many local

markets remain uncertain of whether prices have reached their bottom. Uncertainty, in turn, adds to the slow pace with which markets adjust.

Given the considerable challenges still facing the home market, and given housing's traditional role as a leading sector in economic recoveries, many have sought ways for public policy to speed up the market's adjustment process — for instance, through additional loan modification programs that enable some distressed borrowers to restructure their debts and keep their houses out of foreclosure. While such proposals certainly merit consideration, the success of

similar initiatives so far has been mixed. Moreover, even if carefully crafted new measures could hasten the ultimate resolution of the housing market's current slump, there really is no quick fix for the most

fundamental problem facing that market — the fact that home building simply got ahead of demand during the boom of the early 2000s. This left an inventory overhang of houses that were built but never sold, and which exists independently of the financial conditions of borrowers and lenders. To a considerable extent, working down that inventory will simply take some time.

Policies that can assist distressed households could ease the constraints some feel on their broader consumption expenditures. But it is worth remembering that most such policies amount to a transfer from others in the private sector — which could dampen the impact on overall private spending. And just as house prices ran up over a relatively long period of time prior to this recession, it seems clear there will continue to be a considerable period of adjustment until the market fully stabilizes. Similarly, just as we should have been cautious about some public policies that likely contributed to the boom and subsequent bust — for instance, the coordinated efforts of multiple agencies to promote homeownership as a near-universal goal — we also should be cautious now about proposals that may show promise in the short run but also could contribute to long-run distortions.

Troubles in the housing market have drawn the attention of well-intentioned people with a variety of perspectives. Understandably, the temptation for policymakers to intervene is great, but such problems may present no easy solution, meaning a policy of hands off may ultimately be the one that is most effective in getting people back on their feet.

RF

To a considerable extent, working down housing inventory will simply take some time.

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

The Next Big Thing

Innovation is the key to long-term economic growth. But how much do economists know about what actually makes innovation happen — and can policymakers use that information to boost jobs and GDP?

Open House

With an estimated 12 million homeowners underwater on their mortgages and house prices still weak, many economists believe that policy action is needed to help those adversely affected by the housing slump and to stimulate the economy. But others argue that policy intervention would only delay the necessary corrections that need to occur in the housing market.

Geographic Mobility: Why Are More Americans Staying Put?

In the 20th century, the share of the population that moved between states grew until about 1980, when U.S. migration rates started to fall. What is behind the trend?

Interview

Economist John Taylor of Stanford University discusses the causes of the financial crisis and the sluggish recovery, how the “Taylor rule” could help inform monetary policy decisions, and his new book *First Principles: Five Keys to Restoring America’s Prosperity*.

Federal Reserve

When the Fed makes loans to specific troubled institutions or markets, as it did during and after the financial crisis, is it entering the realm of fiscal policy? And what are the consequences?

Economic History

The British are coming! And they are armed with printing presses! The Redcoats were not the first to wield counterfeit currency as a weapon of war, and they certainly were not the last.

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“Macroeconomics with Heterogeneity: A Practical Guide” by Fatih Guvenen

“Recent Developments in Economic Growth” by Diego Restuccia

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