SECOND QUARTER 2010

# REGION FOCUS

THE FEDERAL RESERVE BANK OF RICHMOND

# DOES THE DEFICIT MATTER?

**The ongoing debate over how important fiscal imbalances are to macroeconomic outcomes**

# REGIONFOCUS

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# Placing Limits on Fed 'Credit Policy'

On July 21, President Obama signed the Dodd-Frank Wall Street Reform and Consumer Protection Act. At more than 2,300 pages, this is a large and wide-ranging law with implications for virtually every aspect of banking and finance in the United States. It creates new government agencies, new obligations and powers for existing financial regulators, and new limits on the permissible activities of banking firms. The process of fully implementing the Act will stretch over many years and will include more than 240 rule-makings and 60 studies by various agencies.

As the legislation was being crafted, I expressed concerns about the portion of the bill that created a new government-run resolution mechanism for large failing financial institutions. The discretion to shield creditors, especially short-term creditors, if one of these firms were to be closed could produce ambiguity for investors. Lingering belief in the possibility of such protection could dampen the market discipline the Dodd-Frank Act seeks to enhance.

But the new law also does some very good things. For instance, it tightens constraints on risk-taking by large complex financial institutions — and it provides for more consistent consolidated oversight of those entities when different affiliates have different functional regulators. It also creates a stronger and broader mechanism for cooperation and coordination among federal agencies with financial regulatory and supervisory responsibilities.

There's another accomplishment of the Dodd-Frank Act that I think is very important but has gone largely unnoted. The legislation takes a significant step toward diminishing the role of the central bank in the allocation of private credit, and instead placing that responsibility in the hands of the U.S. Treasury and the Congress.

At the Richmond Fed, we have a history of arguing for just such a delineation of those responsibilities. My former colleague Marvin Goodfriend proposed a "credit accord" between the Treasury and the Federal Reserve, analogous to the Treasury-Fed Accord of 1951 that allowed the Fed to conduct interest rate policy independent of government financing needs. The case for a credit accord rests on the fact that the provision of central bank credit to private borrowers, like other public-sector credit provisions, is an act of fiscal policy and should be subject to the normal checks and balances the Constitution provides for the distribution of public funds. In addition, interventions in private credit markets could compromise the central bank's ability to conduct monetary policy independently of the legislative and executive branches. Such independence has been crucial to the Fed's pursuit of price stability since the 1970s, and thus beneficial to the larger economy.

The Dodd-Frank Act reduces the Fed's emergency lending powers by amending the portion of the Federal Reserve Act — Section 13(3) — that allowed the Fed to lend to "individuals, partnerships, and corporations" under "unusual and exigent circumstances." Most of the vast expansion of Fed credit beyond depository institutions was made under this authority — the lending connected with Bear Stearns and AIG, for example, as well as the special credit programs for the commercial paper and asset-backed securities markets. The Dodd-Frank Act only permits lending programs with "broadly based" eligibility that provide liquidity to the financial system, and only with the written consent of the Secretary of the Treasury. Fed lending to aid individual nonbank institutions under Section 13(3) is prohibited.

These provisions, along with a number of new reporting requirements, reduce the scope of Fed emergency lending powers and improve accountability, though they stop short of restricting the Fed from allocating credit entirely. Nonetheless, the Dodd-Frank Act takes an important step toward a credit accord, and any journey begins with but a single step. **RF**

JEFFREY M. LACKER
PRESIDENT
FEDERAL RESERVE BANK OF RICHMOND

## Crossing the Border
### As Taxes Rise, Locals May Buy Cigarettes Elsewhere

**During a time when revenue is difficult to come by for many local and state governments, a number of city councils and state legislatures are looking for ways to raise money. For many of these governing bodies, raising excise taxes, such as those for cigarettes, could seem to offer the least politically contested route to increasing revenue.**

Washington, D.C., imposed a 50 cent increase in its cigarette tax, effective October 2009. The tax is now $2.50 per pack.

The economic impact of excise taxes like those for cigarettes has garnered attention from politicians and academics alike. A recent contribution came from economist David Merriman of the University of Illinois at Chicago. Merriman arranged teams to collect a representative random sample of littered cigarette packs in parts of Chicago and neighboring jurisdictions for his paper, "The Micro-Geography of Tax Avoidance: Evidence from Littered Cigarette Packs in Chicago," published recently in the *American Economic Journal: Economic Policy*.

Merriman's results suggest that tax avoidance may be a significant concern. In Chicago, 75 percent of the littered packs displayed no city tax stamp, indicating that they were purchased outside the city. Given the tax differential between Chicago and neighboring locales, it's no surprise. In July 2007, Chicago proper had a combined state and local cigarette tax rate of $3.66 per pack, while nearby Indiana had only a 55.5 cent state levy and no local taxes. Merriman also looked at a sampling of properly disposed packs in Chicago, and those results indicate that the littered boxes were representative of all packs.

A key subtlety that Merriman noticed is when it comes to tax avoidance, distance matters. In Chicago, "the degree of avoidance diminishes rapidly with distance from the [Indiana] border," he said in a phone interview. That observation holds true in cities where he has conducted similar studies. In New York City, for example, about half of littered packs did not include a NYC tax stamp. But in Warsaw, Poland, where consumers must travel much farther for lower-cost cigarettes, only 11 percent of smokers were thought to have participated in the illicit market.

In the case of Washington, D.C., comparisons to New York City and Chicago may be more apt. At $2.50 per pack, the excise tax in D.C. is currently the ninth highest among state taxes in the country, more than $1 higher than the national average for state cigarette taxes. More important, D.C. residents must pay a tax that is more than $2 a pack higher than in neighboring Virginia, which levies a fee of 30 cents per pack. "The proximity of D.C. to Virginia and the ease of transportation between the two lead me to think you could find a ton of Virginia packs there," Merriman says.

From a revenue perspective, the latest numbers from D.C. certainly are not encouraging. For the six-month period following the October 2009 tax increase, cigarette tax revenues in the District of Columbia actually have fallen 23.6 percent, or $4.9 million, compared to the same period a year earlier. Of course, high taxes may not be the only culprit — a slumping economy can diminish consumption and hurt tax revenues as well. But recessionary effects on excise tax income elsewhere seem more modest. In Virginia, for instance, tax revenue from cigarettes fell only 0.32 percent between fiscal years 2008 and 2009. According to the *Washington Business Journal*, D.C. Chief Financial Officer Natwar Gandhi speculated in a February 2010 revenue estimate that D.C.'s tax increase sent local smokers to Virginia and Maryland to buy cigarettes.

While tobacco-industry lobbyists point to decreases in tax revenue as a reason to keep cigarette taxes low, certain advocacy groups, such as the Campaign for Tobacco-Free Kids, argue that cigarette tax avoidance is overhyped and not widespread enough in many places to result in a decline in government revenue.

Merriman suggests that policymakers should avoid generalizations and instead pay close attention to the different circumstances and conditions each locality faces, especially distance to alternative markets. "In D.C., [proximity to Virginia and Maryland] makes avoidance a prime issue, but say for a large city in the middle of a state, it shouldn't feel like it can't raise taxes without encountering a significant avoidance effect."

—ROSS LAWRENCE

PHOTOGRAPHY: GETTY IMAGES

## End of an Era
# South Carolina Hikes Tax on Smokes

In South Carolina, lawmakers in May voted to raise the cigarette excise tax from 7 cents a pack to 57 cents a pack. For 33 years, South Carolina had the lowest cigarette tax in the country — a reign that ended when the tax hike took effect July 1.

South Carolina has long been a significant tobacco-producing state, which may partially explain its historical commitment to keeping cigarette taxes low. Although the state's economy has diversified considerably from its mostly agrarian origins, tobacco remains an important crop. According to the U.S. Department of Agriculture, South Carolina dedicates about 20,084 acres to tobacco cultivation, the fifth highest of any state. Grown mostly in the northeast part, known as the Pee Dee region, it is South Carolina's most profitable crop by acre and the fourth highest by cash receipts.

The rate increase moves South Carolina closer to the Fifth District average of $1.06 for cigarette taxes. Virginia now sits with the lowest tax in the District at 30 cents per pack, while North Carolina and West Virginia levy 45 cents and 55 cents per pack, respectively. Washington, D.C., on the other hand, charges $2.50 per pack in taxes, while Maryland levies $2 a pack. Both the Fifth District average and South Carolina's tax rate remain considerably lower than the average for all states of $1.45.

Legislators hope the tax increase will provide additional financing for Medicaid programs for the poor and disabled. Of the $135 million the hike is expected to raise in revenue for the state, $125 million will be allotted to Medicaid. That money should largely replace federal bailout dollars that have kept the program in the black for two years.

Although the impetus for the new law may have been financial in nature, antismoking groups have stepped up pressure on states in recent years to use excise taxes — among other policy options — to reduce demand for tobacco products. In April, the Centers for Disease Control and Prevention issued a report about state excise taxes, highlighting that a 10 percent increase in the effective price of cigarettes can curb consumption by 4 percent. Of the states that increased cigarette taxes in 2009, or thus far in 2010, South Carolina is the first to allocate some of the projected revenue to tobacco prevention and control. The state will set aside $5 million for cancer research and smoking cessation programs.

– ROSS LAWRENCE

### State Cigarette Excise Taxes

| Highest Rates | |
|---|---|
| New York | $4.35 |
| Rhode Island | $3.46 |
| Washington | $3.03 |
| Connecticut | $3.00 |
| Hawaii | $3.00 |
| New Jersey | $2.70 |
| Wisconsin | $2.52 |
| Massachusetts | $2.51 |
| District of Columbia | $2.50 |
| Vermont | $2.24 |

| Lowest Rates | |
|---|---|
| Missouri | $0.17 |
| Virginia | $0.30 |
| Louisiana | $0.36 |
| Georgia | $0.37 |
| Alabama | $0.43 |
| North Dakota | $0.44 |
| North Carolina | $0.45 |
| West Virginia | $0.55 |
| Idaho | $0.57 |
| South Carolina | $0.57 |

**NOTES:** Average state tax: $1.45 per pack. Chart lists state tax rates noninclusive of federal excise tax or any local taxes.
**SOURCE:** Campaign for Tobacco-Free Kids

## Taxing e-Commerce
# Amazon Fights N.C. Access to Records

People owe sales taxes on goods purchased online, even if remote sellers don't collect. Some catalog and Internet retailers don't charge the tax in states where they have no stores (or other physical presence). So several states have intensified efforts to collect. North Carolina, for instance, asked Amazon late last year for information on transactions to North Carolina addresses. Amazon subsequently sued.

Sales and use collection on Internet purchases are mired in the confusing concept of "nexus," or physical presence, and the issue will likely go unresolved until the U.S. Congress weighs in. Until then, states will keep trying to persuade retailers to collect.

For example, North Carolina unveiled a compromise for Internet retailers who have operated affiliate programs in the state. Those who agree to collect future sales/use taxes and sign onto the program by Aug. 31, 2010, won't pay penalties, back taxes, or interest. Earlier efforts to extract taxes included a 2009 law requiring online retailers to collect when affiliate Web sites operated by state residents refer customers to those retailers.

Other states have passed these "Amazon" laws, named for the major online-only seller. In response to the North Carolina law, Amazon ended its agreements with bloggers and business Web sites that referred business to the seller. The firm did likewise last spring in Colorado when the state passed a similar law. Amazon lost its court challenge to New York state's Amazon law, but is appealing.

Amazon's federal lawsuit seeks to block the request of the North Carolina Department of Revenue (DOR) for seven years' worth of customer order information. The legal action reads, in part: "The DOR's actions threaten to chill the exercise of customers' expressive choices and to cause Amazon customers not to purchase certain books, music, movies, or other expressive material from Amazon that they might otherwise purchase if they did not fear disclosure of those choices to the government." Amazon wants the court to agree, so that other states won't do likewise. In late June, the American Civil Liberties Union filed a complaint on behalf of one named and six anonymous North Carolinians, in support of Amazon's complaint. The ACLU intervened, according to its press release, because of free speech and privacy issues.

The secretary of the DOR, Kenneth R. Lay, wrote the American Booksellers Association in June, in response to a request, that the department isn't interested in customers' specific book titles but needs product codes to calculate the taxes.

The stakes are rising, along with the value of goods and services sold online. In 2008, the value reached $3.7 trillion, according to the U.S. Census Bureau's latest adjusted figures. About $142 billion were business-to-consumer retail sales. As consumer spending picks up, it's likely that online and catalog sales will too.

Donald Bruce, William Fox, and LeAnn Luna of the University of Tennessee estimate state and local revenue losses nationwide may grow to $11.4 billion by 2012. Estimates of losses in North Carolina, with a 5.75 percent sales tax, could reach $213.8 million.

Warehouses are apparently excluded from the definition of "physical presence." Amazon operates a warehouse in Virginia, from which merchandise is shipped, but pays no sales and use tax in Virginia. An Amazon bill introduced during the Virginia General Assembly in 2010 failed to pass.

The courts last weighed in on remote sellers and tax collection in 1992. The U.S. Supreme Court ruled in *Quill Corp. v. North Dakota* that a business wasn't required to charge sales tax in states where it had no physical presence. The opinion suggested Congress had the authority to resolve the issue. So far it has not, though some states have simplified tax rates and administration to make collection easier. Remote sellers have objected to the complexity and variation among state and local tax regimes. Through the Streamlined Sales and Use Tax Agreement, 23 states of the 45 that collect sales taxes have legislated changes conforming to the agreement. North Carolina and West Virginia are two Fifth District states that have done so.

There's a possible advantage for remote sellers who don't collect taxes. "Theory would suggest you have out-of-state firms competing on something other than a level playing field," says Don Bruce, one of the University of Tennessee economists who has studied sales tax revenue losses from electronic commerce. They operate at an advantage over local firms that do remit this tax. "So there's an inflow of activity from those sellers, presumably at the expense of a local business." The lack of clarity on the sales tax issue also can distort remote sellers' organization and location decisions, he notes.

States are likely to get more aggressive in trying to collect from catalog and Internet retailers, but many customers are unlikely to voluntarily pay the tax when it's not collected at the time of purchase.

—BETTY JOYCE NASH

# An Anchor of Gold

BY STEPHEN SLIVINSKI

## How the gold standard works in theory and practice

Some modern critics of the Federal Reserve suggest that it could be eliminated and replaced with a gold standard. They claim that monetary policymakers are apt to bend under pressure to inflate the currency. A gold standard, on the other hand, can serve as an anchor for the currency that puts a limit on the growth rate of the money supply.

There are benefits to a gold standard, but there are costs too. The history of the gold standard provides important context for the suggestion that the United States should return to a commodity-backed monetary system — gold historically being the most commonly used commodity. Additionally, policymakers and the public could benefit from a greater understanding of how the gold standard works, even if reforms of the monetary system do not include its restoration.

### Mechanics of a Gold Standard

In the United States, the gold standard operated for most of the 18th century and the early 20th century before the creation of the Fed. (See sidebar).

In the absence of a central bank, nations that committed to the gold standard agreed to redeem their currency at a fixed price of gold. The gold standard effectively fixed exchange rates between participating nations since those currencies were themselves fixed to gold. When the stock of gold is relatively fixed, this arrangement can provide a predictability that currencies not anchored by a commodity standard may fail to produce. The supply of money is constrained by the amount of gold in the vaults of each nation. By contrast, fiat money created by central banks and not backed by a commodity in relatively fixed supply could be devalued simply by printing more of it.

That doesn't mean that prices wouldn't change under a gold standard. In practice, the price level of nations would tend to move in tandem under this arrangement. The mechanism that drives the movement in the price level is the balance of payments that results from trade between nations. For example, assume that a technological innovation increases economic growth in the United States. Since the supply of gold, and therefore the money stock, is fixed, prices in the United States will fall since it is cheaper to produce goods domestically as a result of the innovation. Prices of U.S. exports to other countries would fall too. That leads to lower demand for U.S. imports — which are now relatively more expensive — and increased demand for U.S. products abroad.

Under a gold standard, the currency and the commodity by which it is backed travel together. In the example above, the trade surplus would also result in a balance-of-payments surplus in which gold from overseas would find its way into the coffers of U.S. banks as foreign traders use dollars to purchase U.S. goods.

The stabilizing effect of the gold standard manifests itself here in how prices would react to this surplus. The new gold in the United States will reverse the initial price decline. Meanwhile, the exodus of gold from abroad will lower the price level in the countries that traded with the United States since smaller amounts of gold equal a shrinking of the money supply. Equilibrium is reached when the relative prices between nations converge.

### Weighing the Costs and Benefits

While anchoring the money supply to gold may have obvious benefits, there are risks to consider. One potential

*Historically, many countries have linked their currencies to gold. Pictured, in 1963 a member of the vault staff at the Federal Reserve Bank of New York checks the melt number and fineness inscribed on each gold bar.*

PHOTOGRAPHY: CURATOR SECTION, FEDERAL RESERVE BANK OF NEW YORK

downside is the effect that a discovery of large amounts of gold would have on the price level. This was a problem in the late 1840s when the California gold rush introduced large amounts of gold into circulation, causing a "monetary shock" and a rise in the price level of goods. In addition, mining and minting gold is costly. Economist Milton Friedman once estimated that the resource price of producing gold and maintaining a full gold coin standard for the United States would be more than 2.5 percent of GDP. However, that cost could fall over time as new technologies are developed.

Some believe that gold flows between nations serve as a check on inflation. Tame inflation over the long term was a strong characteristic of the gold standard. Yet gold flows could transmit detrimental shocks, both monetary and nonmonetary, between economies. In the past, vulnerability to economic shocks caused prices to be highly unstable in the short run. Economist Michael Bordo of Rutgers estimated the "coefficient of variation" in the price level under the historical gold standard. A higher coefficient indicates more short-term instability. For the United States between 1879 and 1913, the coefficient was 17, which Bordo notes is quite high. Between 1946 and 1990, when central banks were able to deviate from the automatic responses required by the gold standard, it was only 0.88. By association, real output is also highly variable under a gold standard. The coefficient for variation was 3.5 between 1879 and 1913. But between 1946 and 2003 it was only 0.4.

Central banks would later mitigate the costs of economic shocks by pursuing countercyclical policies. Yet a gold standard, by definition, makes the money supply procyclical — when the economy contracts, so does the money supply. For supporters, this is a benefit: It can limit the potentially expansionary impulses of central bankers. Supporters also point out that the system can work without a central bank officiating the movement of gold. Instead, each government must make a credible commitment to allow currency holders to redeem their bills for a predetermined amount of gold. One way to do this is to pass a law that fixes the exchange rate between gold and the currency. In the United States, the Gold Standard Act of 1900 set the price of one ounce of gold at $20.67. However, keeping such credible commitments may prove difficult in the wake of unexpected shocks and geopolitical upheaval.

### Central Banks and the Gold Standard

Much of the 20th century featured a mixed system in which central banks and the gold standard existed simultaneously. The ideal role of central banks when an international gold standard is in force is to sustain the fixed exchange rates and allow prices and output to vary as required by the movement of gold across borders. When gold is flowing into the country, for instance, the central bank should raise the interest rate at which it lends to banks — the discount rate — to facilitate the inflow. Conversely, the central bank should lower the discount rate to facilitate the gold outflow when a balance-of-payments deficit materializes.

However, there can be temptations for central banks to stop playing by the rules. Monetary policymakers could "sterilize" the gold flow: They could buy or sell domestic

## The U.S. Gold Standard Before the Fed

Between the nation's founding and 1971, the United States had been on one form or another of a gold standard. The authors of the Constitution were of the opinion that any money minted by the federal governments should be backed by some "specie" standard (i.e., gold or silver).

On the recommendation of Secretary of State Alexander Hamilton, the U.S. Congress passed the Coinage Act of 1792. That officially put the United States on a bimetallic standard in which the dollar was defined as equaling a specified weight in gold or silver. However, the ratio between gold and silver that the act established — 15 grains of silver to 1 grain of gold — served to undervalue gold relative to silver after the act was passed. This was particularly true over the next three decades as mines in Mexico yielded more silver. As a result, gold began to flow out of the United States and silver began to flow in. While gold and silver coins were still accepted as legal tender, gold coins became quite scarce.

The Coinage Act of 1834 put the United States on a de jure gold standard. It moved the ratio of silver to gold to 16-to-1. That helped remedy the imbalance, and gold coins became more common in the United States.

Before the Civil War, state-chartered banks could issue notes and certificates that were redeemable in specie. During the war, a partly decentralized national banking system existed in which federally chartered banks would deal in "greenbacks" issued by the U.S. government backed by little specie. The return to an operational gold standard occurred in 1879 when the U.S. government resumed payments of gold to dollar holders who demanded them. By that point, however, a series of Supreme Court decisions had made the greenbacks legal tender, which over time crowded out state-issued currency.

The United States tied itself to a de facto monometallic standard with the Gold Standard Act of 1900. It set the dollar price of gold at $20.67 per ounce, effectively relegating silver to a subsidiary role in the monetary system. This meant that dollars would circulate alongside silver coins, and the U.S. Treasury would aim to sustain the dollar price of gold.

The creation of the Federal Reserve in 1913 took away from the executive branch the explicit power of money stock maintenance. The history of the 20th century would show, however, that the relationship between a gold standard and the central bank was an uneasy one.

— Stephen Slivinski

securities — in other words, either expand or contract the money supply relative to gold — to shield the domestic money supply from the external disequilibrium. This would weaken the ability of the gold standard to anchor the value of money in the economy.

Economic downturns, political pressures, and wartime threatened the gold standard in the 20th century. Just as it was at the peak of its effectiveness in 1914, World War I broke out. Britain, the banking center of Europe, experienced a run on sterling and enacted trade and exchange controls, including a postponement of domestic and international payments. This basically made the international gold standard nonoperational. Other countries instituted similar capital controls. In addition, the issuance of short-term debt to finance the war effort in the United States led the federal government to pressure the Fed to abandon the gold standard rules on exchange rate targets and instead focus on keeping the interest rates on war bonds low.

After the war, the developed nations tried to reconstruct the gold standard. The 1917 U.S. embargo on gold exports was lifted in 1919, and the convertibility of the dollar at the prewar gold price was restored in 1922. The gold value of the dollar rather than the pound sterling soon became the reference point for other currencies. The post-war gold standard was faced with new challenges, though. High tariff barriers during the 1920s hindered the price adjustment process. Also, the United States, France, and England began routine sterilization of gold flows.

The economic pressures of the Great Depression weakened support for the gold standard. Britain left the standard in 1931 after a massive gold outflow. The United States followed in 1933 when emergency measures allowed the federal government to abrogate all gold-related clauses in all public and private contracts. In 1934 it devalued the dollar by raising the fixed price for gold to $35 per ounce. Emergency measures also allowed the issuance of Federal Reserve notes that did not have to be backed by gold. World War II drove central banks even further away from the gold standard as they again sought to keep government borrowing costs low at the expense of the fixed exchange rate. Trade and capital restrictions also hindered whatever cross-border price adjustment might have occurred.

After the war, the finance ministers and treasury secretaries of the Allied nations met in Bretton Woods, N.H., to reconstruct some form of a gold standard. The agreement essentially linked the dollar to gold and, in turn, all other major currencies were linked to the dollar. Yet it also allowed some flexibility for central banks to pursue changes in the exchange rate. Foreign governments were also allowed to trade in their dollars to the U.S. government in return for gold. The expectation was that the United States could credibly commit to maintaining the standard over the long term.

In the early 1950s, the United States held close to 60 percent of the world's gold reserves. By the 1960s, however, dollars began to rapidly flow out of the United States as a result of the Fed monetizing the debt issued to pay for spending on the Great Society social programs and the Vietnam War. The inflationary policies of the United States put pressure on currencies that were linked to the dollar to revalue their currency to satisfy the balance of payments — pressure that reached its peak in 1970. Additionally, U.S. gold reserves were beginning to dwindle because foreign governments were rapidly trading in their dollars for gold. Many foreign policymakers were not convinced that the U.S. government would regain a commitment to exchange rates per the Bretton Woods rules in the near term. To put an end to the international pressure, President Richard Nixon finally took the dollar off gold in 1971, effectively killing the international gold standard.

## Gold and Monetary Policy Today

Since the episode of runaway inflation in the 1970s, monetary economists have learned a number of lessons. Foremost among them is an understanding of how central bank credibility is vital to monetary policy. In some sense, that is also a lesson of the gold standard years. Regardless of the signals central bankers use to navigate policy, public trust that they will stay the course is essential to making the policy work. Even under a gold standard, the stability provided by the commodity anchor dissolves if the central bank can't or won't credibly commit to the rules of the standard.

Today, the price of gold is just one of a number of signals that Fed policymakers may use to make decisions about the direction of monetary policy. Since the 1980s, the Fed's independence and need to maintain its credibility have largely been helpful in keeping inflation under control even when it has to occasionally embark upon countercyclical policy. Many of the traits that supporters of the gold standard value, such as long-term price stability, have materialized over the past 20 years under a fiat money system not directly tethered to the price of gold.

It's unlikely that the nations of the world will adopt the gold standard again. But the lessons of central bank credibility are a product of the gold standard years. Strong public expectations about how the Fed conducts policy may produce the same benefits today that a gold standard once did. **RF**

### Readings


Bordo, Michael D. "Gold Standard." In David R. Henderson (ed.), *The Concise Encyclopedia of Economics*. Indianapolis, Ind.: Liberty Fund Inc., 2007.

Hetzel, Robert L. *The Monetary Policy of the Federal Reserve: A History*. New York: Cambridge University Press, 2008.

Meltzer, Allan H. *A History of the Federal Reserve — Volume 1: 1913-1951*. Chicago: University of Chicago Press, 2003.

Timberlake, Richard H. *Monetary Policy in the United States: An Intellectual and Institutional History*. Chicago: University of Chicago Press, 1993.

JargonAlert

# Leading Indicators

BY RENEE COURTOIS

Forecasting economic activity is critical to policymaking, though at times it is so fraught with uncertainty that many consider it an art rather than a science. Fortunately, forecasts can be aided by certain economic data that tend to react before the economy as a whole starts to move in a new direction. Such data are called leading economic indicators because they reflect economic agents acting in response to expectations about the future direction of economic activity.

Consider the stock market, for example. Financial market participants are generally quite good at gathering information about the likely future course of the economy. A rise in stock prices, therefore, may signal that investors anticipate a coming surge in demand. Similarly, a stock market decline could signal that many firms' prospects are diminished due to a coming contraction or continued sluggishness.

Other financial market variables also hold predictive value. The difference between short-term and long-term interest rates for bonds, called the "yield curve" slope, has proven to be an insightful economic indicator. When the slope is negative, long-term bond rates are lower than those for short-term debt instruments, which implies that investors expect interest rates to fall in the future as they would during a recession. The slope of the yield curve has turned negative about a year before each of the last seven recessions. Of course, not all financial market moves are clearly and unambiguously related to fundamentals, so the signals sent by asset prices and interest rates sometimes can be "noisy."

Economists also can gain perspective on the economy's prospects by tapping into businesses and individuals on the ground. Home builders, for example, must obtain a permit before building — and they are unlikely to do so unless they think consumers are confident enough in their jobs and other economic prospects to make the large purchase of a home. Therefore, the number of new building permits authorized, as measured and released by the Census Bureau, is a strong indicator of coming construction activity. Home construction, in turn, typically precedes other types of economic activity, including consumer spending on housing-related goods such as furniture and other home furnishings.

To get an overall sense of what message these and other leading economic indicators are providing, a research organization called the Conference Board compiles them into an index of Leading Economic Indicators (LEI). The Conference Board took over this duty from the Bureau of Economic Analysis in 1995, though the index of leading indicators can be traced back to the late 1930s when Wesley Mitchell and Arthur Burns (who would later become Fed chairman) compiled these data for the National Bureau of Economic Research.

Each of the above indicators is included in the LEI, along with several other forward-looking series such as new manufacturers' orders, initial claims for unemployment insurance, a broad measure of the money supply, hours worked by manufacturing workers, and the speed with which industrial companies receive deliveries from suppliers. Also included in the LEI is the Index of Consumer Expectations, a monthly survey conducted by the University of Michigan. Consumers who feel confident about the economy's prospects may be more willing and likely to spend, which helps turn that optimism into economic reality.

Each data series included in the LEI is chosen for its consistent relationship with the business cycle, demonstrated over many years. The data also must be timely, relatively void of erratic movements from period to period, and economically significant. When push comes to shove, no data series matches each of those criteria exactly, but the 10 of them included in the LEI arguably come closest.

Since the LEI compiles data series that have already been released, it doesn't provide much new information to markets. But since any single data series may have uncharacteristic blips from period to period, the LEI provides a more reliable picture of the overall trend. If one or two components of the LEI rise sharply, it could be due to unique or even temporary factors taking place in those markets. But if the LEI as a whole rises persistently, investors and policymakers may take notice. Taken together, the LEI composite can help reveal and identify turning points in the business cycle better than any one series can do alone. The LEI has historically led downturns by eight to 20 months, and recoveries by one to 10 months, according to the Conference Board.

Nonetheless, it's important to remember that "the economy" is simply a collection of the actions of millions of individuals and businesses interacting with each other, so there are a great many indicators to watch to know how the economy is performing. No one indicator or index will hold the same importance in every business cycle, and no single economic indicator will ever tell the whole story about economic activity, including the state of the current recovery. **RF**

ILLUSTRATION: TIMOTHY COOK

# What Immigration Means for the Economy

BY ROSS LAWRENCE

As concerns about a difficult labor market weigh heavily on the minds of many Americans, an enduring anxiety about the effects of immigration on the economy underlies many policy debates. As a result, a number of policymakers and pundits have declared that liberal immigration policies are a source of economic instability for the country.

Jennifer Hunt and Marjolaine Gaulthier-Loiselle put some of these concerns into context with their recent paper. Much of the conventional wisdom holds that immigrants exhaust more than their share of public resources, in addition to providing competition to native-born Americans in the domestic job market. But economic research about these newcomers suggests that they may provide more of a long-run boon to the U.S. economy than previously thought. This article, for example, studies the contribution of skilled immigrants to innovation in the United States.

"How Much Does Immigration Boost Innovation?" Jennifer Hunt and Marjolaine Gaulthier-Loiselle. *American Economic Journal: Macroeconomics*. April 2010, vol. 2, no. 2, pp. 31-56.

The authors point out that the United States had about a 12 percent foreign-born population in 2000, but 26 percent of U.S. Nobel Prize winners from 1990-2000 were immigrants, as were 25 percent of the founders of venture-backed publicly owned American companies between 1990 and 2005. To explore the link between immigration and innovation, Hunt and Gaulthier-Loiselle use data about U.S. patents per capita. "The purpose of studying patents is to gain insight into technological progress, a driver of productivity growth, and ultimately economic growth. If immigrants increase patents per capita, they may increase output per capita and make natives better off." As the authors note, such information undoubtedly should influence policy debates about skilled immigration, such as determining the appropriate number of employer-sponsored H-1B visas to allow for skilled workers.

What if immigrants are just crowding out natives from the science and engineering fields? They control for that possibility, however, in a way that is designed to estimate the impact of immigrants on innovation given positive or negative spillover effects.

Based upon individual-level data gathered from the National Survey of College Graduates, the authors show that a 1 percent increase in the proportion of college-graduate immigrants in the population increases patents per capita by 6 percent.

"In addition to the direct contributions of immigrants to research, immigration could boost innovation indirectly through positive spillovers on fellow researchers, the achievement of critical mass in specialized research areas, and the provision of complementary skills such as management and entrepreneurship," the authors write. They also note "that the immigrant patenting advantage over natives is entirely accounted for by immigrants' disproportionately holding degrees in science and engineering fields."

Of course, unskilled immigrants rather than skilled ones often receive the majority of public scrutiny. Other economists, including David Card of the University of California at Berkeley, have looked at this issue. In particular, Card has addressed the question of whether immigrants hurt the job opportunities of less skilled native workers. In a 2005 paper titled "Is the New Immigration Really So Bad?" he concludes that, on the whole, "evidence that immigrants have harmed the opportunities of less educated natives is scant." He also responds to the research of economist George Borjas of Harvard University and others, who argue that recent years have witnessed an increase in cultural and language differences between immigrants and natives that may make assimilation more difficult. According to Card's research, immigrants may be adapting to the American lifestyle better than some think — on average, second-generation children of post-1965 immigrants have higher education levels and wages than their native counterparts.

Card considered a more specific example of the relationship between immigration and unemployment in a 1989 paper, in which he examines the impact of the Mariel Boatlift on the Miami labor market. During about a five-month period in 1980, some 125,000 Cubans fled a declining economy and internal tensions in their native country. The data suggest about half of these immigrants, most of whom were relatively unskilled, settled permanently in Miami, Card writes. This drove up the city's population by about 7 percent. It had no discernable effect on the wage rates for less skilled non-Cuban workers, Card found, nor did Miami's unemployment rate rise disproportionately to state and national averages.

The growing body of research ought to contribute to a more informed debate about U.S. immigration policy. Although other political considerations play a role in this conversation, the bulk of evidence seems to suggest that immigrants — of varying skill levels — have a net positive effect on the American economy. **RF**

# Currency Swaps with Foreign Central Banks

BY RENEE COURTOIS

The Fed acts as the lender of last resort when financial market distress makes it difficult for banks to obtain the short-term loans that help finance their operations. That is, the Fed lends U.S. dollars to U.S. banks. But what happens when the banks in need of dollar-denominated funds are located abroad?

> What happens when banks in need of dollar-denominated funds are located abroad?

The Fed typically has no direct means of lending to foreign financial institutions, yet many foreign banks hold U.S. dollar-denominated assets and liabilities, and thus have occasional need to borrow from and lend to other banks in U.S. dollars. When financial markets recently grew nervous about the fiscal positions of Greece and other European countries and the exposure of financial institutions to troubled sovereign debt, investors charged a higher premium to extend funding to those institutions, including in dollars, risking a disturbance to financial and economic activity.

That's why in May the Fed reopened a "currency swap" program with five central banks to help them act as lender of last resort in their respective countries — in dollars. The swap lines work like this: The Fed sells a quantity of dollars to a foreign central bank, and in payment receives an equal quantity in foreign currency at the prevailing market exchange rate. Simultaneously, the Fed and the foreign central bank agree to trade the funds back at a date agreed upon in advance, between one day and three months later. The second transaction reverses the first. But over the duration of the swap, the foreign central bank is free to use the funds to make dollar-denominated short-term loans to banks in its jurisdiction.

The currency swap lines were previously launched in December 2007 to address the financial crisis, but had been allowed to expire in February 2010 after interbank dollar funding markets improved. Initially, the swap lines were used because investors feared counterparties' exposures to securities related to subprime mortgages in the United States. Those assets were often denominated in U.S. dollars, and for foreign banks a large portion was financed through interbank dollar funding markets. When interbank lending became strained, these institutions had to either find alternative sources of dollar funds or sell the assets under chaotic market conditions, which potentially could have contributed further to their already plunging prices.

European Union, United Kingdom, and Swiss banks' dollar exposures on their balance sheets exceeded $8 trillion in 2008, report New York Fed economists Linda Goldberg, Craig Kennedy, and Jason Miu. Foreign banks were hit especially hard when activity in private U.S. dollar interbank lending markets slowed because they were more dependent on those markets than American banks. U.S. financial institutions are relatively flush with dollars — the denomination of a majority of their assets as well as their deposit base — and could tap into dollar backstop financing, including from the Fed, when needed. So, while actions that eased global financial distress were surely beneficial for U.S. institutions, the swap lines were not really created to benefit U.S. banks, note Michael Fleming and Nicholas Klagge, also of the New York Fed, in an April 2010 summary of the swap program.

The swaps carry little direct risk to the Fed. There is no exchange rate risk since the loans are made and reversed using the same exchange rate. And though the funds are intended to be loaned to private institutions, the foreign central bank assumes any risk that loans will default, determining independently which institutions are able to borrow and what types of collateral they can borrow against.

Similar swap lines were launched following the terrorist attacks of 9/11, in a coordinated effort by several central banks to keep global financial markets operational. In fact, other forms of swap agreements were in place from 1962 to 1998, though those existed mainly to facilitate central banks' interventions in foreign exchange markets to affect exchange rates — which the Fed rarely does today.

The recent swap lines will play only a supporting role in easing the European financial market strains, noted Brian Sack of the New York Fed in a June speech. The policy actions of European governments toward debt will do the heavy lifting. Indeed, little of the dollar-denominated funds have actually been exchanged with the five central banks involved relative to the amount traded during the financial crisis. (At the program's peak in December 2008 swaps outstanding comprised more than a quarter of the Fed's total assets.) Still, the swap lines may be important in reassuring creditors that dollar funding is available, as central banks hope to head off further dollar liquidity shortages.

"The swaps were essentially put in place in a preemptive manner, under the view that their presence would provide a backstop for dollar funding markets and help to bolster market confidence," Sack said. To firmly establish confidence that dollar liquidity will be available, the swap lines will be kept open until January 2011. **RF**

# Righting What Went Wrong

BY CHARLES GERENA

**"Prudential Discipline for Financial Firms: Micro, Macro, and Market Structures." Larry D. Wall, Federal Reserve Bank of Atlanta Working Paper 2010-9, March 2010.**

Federal Reserve economists have been busy dissecting the 2007-08 financial crisis and evaluating various reforms of market regulation. In this paper Larry Wall at the Atlanta Fed discusses ways to strengthen market discipline at financial firms as well as revise government supervision at both the firm level (microprudential) and the market level (macroprudential).

Wall argues that the owners and managers of a financial firm won't manage their risks prudently unless they bear the costs of poor management practices. "If the government bears most of the risk of loss, not only will the managers lack adequate incentive to manage the risk," he notes, "but the government is likely to insist on playing a major role in the firm's risk management." And regulators can't observe or second-guess every manager's financial decisions.

Wall suggests that a microprudential supervisor should regulate a broad spectrum of firms, which encourages information sharing among supervisors of different sectors. As for macroprudential supervisors, Wall says they should be bold in their efforts to understand major threats to the financial system, but modest in their ambitions.

"Macroprudential supervisors cannot guarantee an end to all financial instability, and trying to attain such a goal could be worse than having no macroprudential supervisor," Wall notes. Aiming to prevent all instability will create "an incentive to severely limit the financial system's capability to innovate and to take risk."

Wall does offer several options for mitigating the chances of large losses turning into a full-blown crisis. A special resolution regime could help shut down insolvent firms that are systemically important, thus avoiding the instability that may result from a bankruptcy. Or, firms could be required to develop their own resolution plan. Regulators could also reduce the probability of failure by obtaining the commitment of private investors to recapitalize failing firms.

**"Financial Statistics for the United States and the Crisis: What Did They Get Right, What Did They Miss, and How Should They Change?" Matthew J. Eichner, Donald L. Kohn, and Michael G. Palumbo, Federal Reserve Board Finance and Economics Discussion Series 2010-20, April 2010.**

Could more and better data on risky mortgages and securitization have averted the financial crisis? Donald Kohn, vice chairman of the Federal Reserve Board of Governors, and two deputy associate directors of the Board's research and statistics division evaluate the true benefits of improved data collection in this paper. Their general conclusion is that, while gaps in data and analysis prevented market participants and regulators from recognizing the vulnerabilities building up in the financial system, filling those gaps is only one step in developing an early warning system.

"The information delivered by expanded and improved, but essentially static, aggregate data can (and should) be relied on for signals akin to grainy images captured by reconnaissance satellites," the authors note. Such images are suggestive, but aren't conclusive by themselves. "Improved data collection can provide the greatest value by highlighting changes and inconsistencies that bear further investigation using other, more-focused tools mobilized to deal with a particular anomaly."

**"Nonlinear Effects of School Quality on House Prices." Abbigail J. Chiodo, Rubén Hernández-Murillo, and Michael T. Owyang, Federal Reserve Bank of St. Louis *Review*, May/June 2010, vol. 92, no. 3, pp. 185-204.**

The quality of a neighborhood's schools is one of the factors scrutinized by families during their house hunt. So, it would be logical to expect that factor to be reflected in home prices. Researchers at the St. Louis Fed argue that these variables have a nonlinear relationship: The home price premium grows as school quality increases.

For one thing, families who value education more than others will compete with one another for homes in neighborhoods with the highest-quality schools. Alternatively, families may choose homeschooling or private schools to give their children a better education if they live in lower-quality school districts. Therefore, the quality of the neighborhood public school is less important to them and has less influence on home prices.

The authors further hypothesize that school quality can be considered a luxury good, so people in richer neighborhoods will pay higher home prices for the same marginal increase in school quality.

To test this effect, the paper's authors used housing prices, math test scores for the St. Louis metropolitan area, and other data. "Unlike most studies in the literature, we find that the price premium parents must pay to buy a house in an area associated with a better school increases as school quality increases," the authors note. "We also find that the racial composition of neighborhoods has a statistically significant effect on house prices." **RF**

**As fiscal** imbalances **increase, economists** debate **their effect on the macroeconomy**

# Do Deficits Matter? And, If So, How?

BY STEPHEN SLIVINSKI

In late 2008 the U.S. government enacted a number of spending programs that were intended to stimulate the economy and support struggling financial institutions. In so doing, it continued a practice that has been common for decades: spending more money than it collects. The resulting deficit in the budget requires that the federal government issue Treasury debt to pay for the spending in the short term.

This seems like a relatively innocuous practice. As long as capital markets have a demand for Treasury bills, what's the worry? But that question has divided economists for decades. The recent upswing in the current federal deficit and projected future deficits has pulled this debate back into public view.

As of fiscal year 2009, the federal budget deficit reached almost $1.4 trillion, or 9.9 percent of GDP. That's the largest deficit since 1945 as a percentage of the national economy. At that time, wartime spending was accelerated and the budget deficit was an unusually high 22 percent. It dropped to 7 percent in 1946. Since then, however, it hasn't reached beyond 6 percent of GDP.

The prospect of deficits remains high. Current spending is projected to keep deficits persistently large for the foreseeable future. The levels of debt that will accumulate are unlike anything we've seen before in peacetime. That will be compounded by the fact that even state and local governments are issuing debt in historic amounts. The total debt load of state and local governments has grown from $1.1 trillion in 1995 to $2.4 trillion in 2009. Most of that debt increase — nearly $800 billion — has been issued in the last six years.

Economists have made some headway in research on the topic of how deficits might influence macroeconomic variables — in particular they have generally rebutted the idea that deficits alone have a substantial effect on inflation in the United States — but there remains debate about whether deficits have any real influence over other variables, such as interest rates.

With deficits and debt levels projected to be bigger than normal in the foreseeable future, the question of what macroeconomic effects deficits can have is an important one. The analysis done by economists over the past 30 years has tried to find consistent relationships between debt levels and certain macroeconomic variables. The results to date have been mixed.

### Deficits and Inflation

Many arguments have been put forward in defense of balanced budgets. In the 1950s, some policymakers worried that running budget deficits was inherently inflationary. The concern was that government spending in excess of revenue would artificially increase aggregate demand in the economy. This was actually a feature, not a bug, in the schools of Keynesian thought that saw government spending as a lever to revitalize economic production. But the counter-Keynesian argument of that era sometimes hinged on an assertion that counterproductive inflationary pressures might arise out of such deficit spending, while at the same time arguing that government spending was limited in its ability to boost real output.

It was hard to tell at that time whether either view was correct as an empirical matter. After the military demobilization post-World War II, the federal government did not run large deficits until the 1960s. Part of that had to do with the ideology of President Dwight Eisenhower, who is remembered as an advocate of balanced budgets because of his belief that it was a necessary component of a constitutionally limited government. As a practical matter, policymakers on Capitol Hill and even within the Federal Reserve then regarded deficits as dangerous because of the inflationary pressures they might unleash.

For most of the decade, a post-war economic boom helped sustain revenue and make deficits a less likely threat. The budget imbalances that did eventually arise in the 1950s were small (usually between 0.5 percent and 2 percent of GDP) and transitory. Each of those annual deficits was mainly the result of an economic slowdown that reduced federal revenue.

Beginning in the 1960s, however, budget deficits became the norm. At the same time, inflation began to take off. While some worried about this, it wasn't necessarily at odds with the Keynesian view of deficits. In fact, Keynesians saw inflation as an acceptable cost of the increased output and employment that would come from deficit spending.

What's missing from this simple story is that monetary policy at the time was becoming progressively looser to support more government spending and that began to fuel the subsequent inflation. "The extent to which monetary policy is used to help balance the government's budget is the key to determining the effect of budget deficits on inflation," writes Keith Sill, an economist at the Philadelphia Fed.

Indeed, one of the things that economists generally agree on in relation to budget deficits is that — at least in the U.S. experience — they are not inherently inflationary. Analysis of the history of fiscal and monetary policy from the 1960s to the 1980s has led most economists to argue that the relevant factor during this period was that the Fed began to warm to the idea of "monetizing" the deficit. In essence, that meant the Fed would act to guarantee there was always a market for Treasury debt.

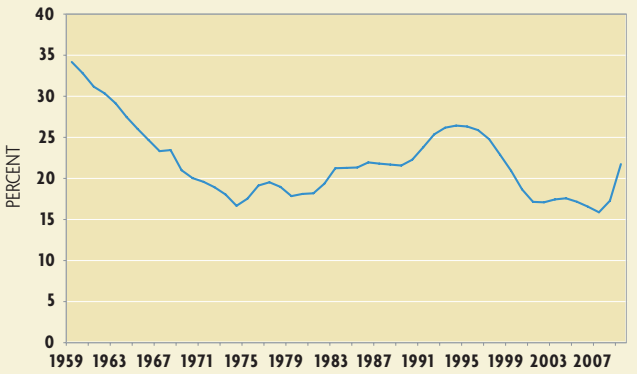
The fear of inflationary deficits is most credible today in small developing countries. Many small developing countries have central banks often motivated more by political pressures than by a regard for price stability. But it's difficult to determine whether one central bank is more independent than another or more prone to monetizing the debt. As an empirical matter, capturing the independence of a central bank quantitatively is difficult.

A study in the *Journal of Economic Literature* by Stanley Fischer, the current governor of the Bank of Israel, Ratna Sahay of the International Monetary Fund, and Carlos Vegh of the University of Maryland offers some insight to this question. The authors split a sample of 94 market economies into high-inflation countries and low-inflation countries. The high-inflation countries were those that had at least one episode of 12-month inflation exceeding 100 percent during the period from 1960 to 1995.

In both sets of countries they needed to find a variable that would explain the incentive a government would have to pressure a central bank to monetize the deficit. They chose seigniorage as a fraction of GDP. When a central bank "creates" money, it generates seigniorage revenue resulting from the difference between the cost of producing the currency and the face value of the currency. (For example, if it costs 5 cents to produce $1, the seigniorage amounts to 95 cents.) That revenue can be used to pay for spending in the federal budget.

A country with a high seigniorage-to-GDP ratio might be more tempted to generate that revenue when faced with a budget deficit. That's what Fischer and his co-authors discovered. First, they found that high-inflation countries tended to rely more on seigniorage to help finance government spending. The ratio averaged about 4 percent in high-inflation countries and 1.5 percent in low-inflation

**U.S. Federal Publicly Held Debt as a Percentage of All U.S. Nonfinancial Debt**




**NOTE:** For years 1959 to 1990, data is monthly. For all other years, data is annual.
**SOURCE:** U.S. Census Bureau, 2005-2007 American Community Survey

ones. Next, they found that a worsening fiscal balance is more likely to be accompanied by an increase in seigniorage in high-inflation countries than in the low-inflation ones. A 10 percentage point increase in the budget deficit as a share of GDP is associated with, on average, a 4.2 percentage point increase in seigniorage as a share of GDP. In low-inflation countries, however, there was no significant link.

The experience of high and erratic inflation in the 1970s in the United States taught Fed policymakers the importance of price stability. The 1980s proved that the Fed could take the necessary steps to tame inflation. The credibility of the Fed as an institution is essential to maintaining price stability. The fact that seigniorage revenue is a very small portion of the U.S. government's revenue stream may merely be secondary to the fact that policymakers have a much better sense of what works and what doesn't in terms of monetary policy. But keeping the lessons of the past 40 years in mind will be vital to making sure that U.S. budget deficits remain noninflationary.

## Deficits and Interest Rates

A debate that has yet to be resolved is whether deficits can influence interest rates. Like many debates among economists, the different conclusions rest on the assumptions made and models used.

One type of model assumes that there is a "crowding out" of investment capital. When a budget deficit is present, more investment capital is swallowed up by Treasury bonds relative to a scenario in which a deficit is lower or nonexistent. This diversion of private savings that would otherwise go to investment makes the remaining available capital more valuable. That drives up the rate of return necessary for competing investment options (including Treasury bills) to remain attractive. Hence, a rise in interest rates.

This is the main story told in a few papers co-authored by Peter Orszag, formerly of the Brookings Institution and currently the director of the U.S. Office of Management and Budget. For example, a widely cited 2004 study he co-authored with Brookings colleague William Gale comes to the general conclusion that deficits do raise interest rates. The estimates they arrive at suggest that the strongest effects pertain mainly to anticipated future deficits: Every 1 percent increase in the projected budget deficit raises long-term interest rates by 25 to 35 basis points.

Another element that bears on whether deficits affect the conversion of available savings into investment capital also happens to be one of the most controversial. It comes from the assumptions made about how people in the present view deficits relative to their (or their children's) expected income in the future. The notion of "Ricardian equivalence" — advanced by Robert Barro of Harvard University and based on an insight from the early 19th century economist David Ricardo — is the phenomenon that, when faced with the knowledge that the federal deficit will grow, people today will save more to account for the fact that they or their children will face higher taxes in the future to pay off the debt. As Michael Pakko, an economist at the St. Louis Fed, explains, under the assumptions of "a closed economy with rational, forward-looking consumers, Ricardian equivalence suggests that deficits have no effect at all." The money borrowed from the public by the government is exactly offset by new savings.

The logical extension of this idea is that interest rates wouldn't have to move to equilibrate capital markets as they would in a world where the crowding out occurred. Yet, when economists have set out to identify episodes of Ricardian equivalence, they have had trouble finding them. Martin Feldstein of Harvard University has suggested that the planned bequests that underlie the logic of the phenomenon aren't all that common. That shouldn't be surprising, he argued in a 2004 speech, "in an economy in which economic growth raises the incomes of future generations so that even an altruistic parent sees no need to reduce his own consumption in order to raise the consumption of his adult children after he has died."

Although the conditions under which Ricardian equivalence holds are quite restrictive, some economists maintain that it is a useful baseline against which to measure the effect of deficit finance on the economy. During the past 25 years, many studies have arrived at the conclusion that there doesn't seem to be much connection between interest rate movements and debt over the long term. In an influential study, Eric Engen of the Federal Reserve Board and R. Glenn Hubbard of Columbia University argue that a better way of viewing the matter isn't to try to find correlations with year-to-year deficits. Instead, the level of government debt as a whole is the factor that has the best chance of influencing interest rates. Even then they find a much smaller effect, an increase of two to three basis points for every 1 percent increase in federal debt as a percentage of GDP.

There are a number of reasons this result might strike someone as unsurprising even if Ricardian equivalence isn't assumed. A wide variety of factors can influence the

determination of interest rates and it is difficult to empirically tease out exactly which interest rate movements are related to increasing debt levels and which are not. Additionally, the debt incurred by the federal government over the past 50 years has been consistently smaller than the aggregate debt incurred by businesses, households, and state and local governments.

Another factor that has renewed skepticism about the effect of deficits on interest rates is the volume of capital from foreign trading partners that has flowed into the country, particularly from those countries with which the United States has a trade deficit, such as Japan and China. As Pakko notes, "the demand for U.S. Treasury securities by foreigners is likely to have mitigated upward pressure on interest rates that might otherwise have been observed."

### Are All Deficits Created Equal?

None of the research so far is meant to suggest that debt and deficits can be run up indefinitely without consequence. As Feldstein argues, for instance, seeing little reaction by interest rates to deficits shouldn't imply that deficits don't reduce national savings. Instead, he argues that the capital inflow from abroad is evidence that deficits can lower savings rates in the United States. A country with "a low saving rate imports capital," he notes, and that's what has happened. He concludes that deficits "reduce national saving and capital formation. That lowers the growth rate for a long period of time and permanently lowers the level of real income and the real standard of living."

Part of this argument depends on what creates the deficit in the first place. For example, small deficits that are the result of business cycles are generally not damaging. Revenues dry up while spending remains constant. The stabilizing effect these sorts of deficits may have on the economy may even be desirable.

What many textbook models seem to miss is how the revenue stream that can pay off the debt is structured. Some economists have pointed out that the current tax code is heavily biased against capital formation. Raising taxes in their current form to cover budget shortfalls may be quite damaging if the deficits are large. The adverse effects that deficits may have, argues Feldstein, "is reinforced by the deadweight loss that results from the need to raise substantial amounts of revenue to service the national debt." That deadweight loss — or, the investments foregone because of how the tax system is structured — can be exacerbated further by the tax code's penalization of capital formation relative to consumption.

Of greater consequence than today's deficits are the permanent structural deficits that may persist and grow over time. The terms popularly used to discuss budget deficits are simply cash-flow identities for the near term: Count the money in and the money out and find the difference. This operation doesn't account for the assets on the federal books nor does it account for the future liabilities of the benefits promised to retirees through Social Security, Medicare, and other entitlement programs. These systems are considered pay-as-you-go programs in which benefits are financed by current-year taxation. Over time, however, the demographic reality is that the tax base will shrink relative to the number of retirees.

The gap between the estimated tax collections and the benefits to be paid, in present value terms, are enormous — much larger, in fact, than the current federal debt of about $13 trillion today. Economist Laurence Kotlikoff of Boston University estimates that the total unfunded liabilities of the federal government are in excess of $70 trillion today. It is these much larger dollar amounts that have many economists worried. These numbers may indeed be large enough to spur future macroeconomic effects of the sort that some have feared since the 1980s.

These larger deficits in entitlement programs can be viewed from this perspective as a byproduct of an institutional problem that requires a structural solution. But it remains to be seen what form that change will take and when. Most deficits to this point haven't been large enough to prompt policy action, except on the rare occasion when the Social Security trust fund was on the verge of falling into deficit in the early 1980s and both the payroll tax and the retirement age were raised to remedy the problem.

How policymakers will deal with the threats posed by these unfunded liabilities remains uncertain. Until that time, economists have once again picked up a debate over the theoretical models and empirical analysis that is likely to provide a useful framework to weigh policy options when the demand for structural change finally materializes. **RF**

## Readings


Engen, Eric M., and R. Glenn Hubbard. "Federal Government Debt and Interest Rates." National Bureau of Economic Research Working Paper No. 10681, August 2004.

Feldstein, Martin. "Budget Deficits and National Debt." L.K. Jha Memorial Lecture to the Reserve Bank of India, Jan. 12, 2004.

Gale, William G., and Peter R. Orszag. "Budget Deficits, National Savings, and Interest Rates." Brookings Panel on Economic Activity, September 2004.

Pakko, Michael. "Deficits, Debt, and Looming Disaster: Reform of Entitlement Programs May be the Only Hope." Federal Reserve Bank of St. Louis *Regional Economist*, January 2009, vol. 17, no. 1, pp. 4-9.

Sill, Keith. "Do Budget Deficits Cause Inflation?" Federal Reserve Bank of Philadelphia *Business Review*, Third Quarter 2005, pp. 26-33.

# Markets for Safety

## Product recalls yield mixed effects on firms

BY BETTY JOYCE NASH

For customers, product defects can create inconvenience at best and cause injury or death at worst. Ensuing recalls also can wreak reputational and sales havoc on firms and sometimes even competitors as the market accounts for information about faulty products. Potential fallout has escalated as the supply chain has gone global and extended the product-recall reach.

A high-profile example involved the 2007 recall of 276 types of toys and other children's products, mostly due to lead-based paint. Parts had been supplied by a multitude of Chinese manufacturers, and toys were sold under brand names in the United States. In another case, a 33-year-old family-run Virginia firm sought bankruptcy after salmonella, traced to peanuts used in foods worldwide, was linked to sickness and several deaths.

Firms can and do survive product recalls, but the direct costs of severe recalls can be high. Indirect costs may in some cases exceed direct costs. Less severe recalls may cost very little. Firms may suffer regulatory fines, as in the case of Toyota's recent $16.4 million levied by the National Highway Traffic Safety Administration (NHTSA), but are most likely punished by the market in a severe recall. Firms may suffer market share and stock value declines after demand plunges. Margins can shrink if a manufacturer slashes prices to spur sales. For instance, Toyota drove April automobile sales by flooding the market with buyer incentives, a sign of fear about the extent of a recall's damage to its bottom line and reputation, says automotive economist George Hoffer of Virginia Commonwealth University. Recalls can tarnish reputations.

Market response is important, and economists have tried to make sense of how direct and indirect costs add up after a recall. It's complicated to unravel the array of factors at play but market responses do generally provide incentives for firms to make safe products. These days, markets can respond more quickly than ever to product recalls, though long-term effects appear mixed in empirical studies.

### Reputation on the Line

Research has confirmed the benefit of a good reputation in the marketplace. Using the definition of reputation to mean the "consumer's subjective evaluation of the perceived quality" of the producer, management professors Pamela Haunschild of the University of Texas-Austin and Mooweon Rhee of the University of Hawaii studied how the reputation of an automaker affects market share in response to recalls.

High-reputation firms enjoy lower costs, can charge higher prices, and can access capital more easily. They profit from better sales and status, and that serves as some protection against competitors and new market entrants. These assets also translate into greater survival rates and better financial performance. "A positive reputation is also important to a firm's competitive advantage because it is a positive signal to potential buyers and suppliers, increasing their willingness to contract with a firm," the authors write.

A good reputation naturally creates expectations of quality among consumers. The market differentiates between high-quality, high-priced products and low-quality, low-priced products, with buyers expecting less from mediocre products. That means missteps in quality among high-reputation firms violate consumer expectations to a greater degree and could prompt some brand switching.

Haunschild and Rhee used official product recall information from NHTSA. (While nearly all recalls are "voluntary," the law requires that manufacturers conform to standards. When they find defects, they're obliged to inform NHTSA within five days and notify customers.) To explore how pre-recall reputation influences impacts on recalls, the authors used auto industry data from 1975 to 1999, and the results were published in 2006. "The results were pretty clear," Haunschild says. "High-reputation firms suffer more than low-reputation firms." The authors also investigated substitution effects and found that among more unique products, recall impacts were lessened because "consumers can't just go find another alternative."

With the instantaneous information flow via the Internet, reputation effects could be greater. "For the high-reputation automakers, my sense is, and we see it with Toyota, there is more of a penalty," she says. Studies indicate consumers may refresh expectations after learning of defects and that may prompt substitute purchases.

Haunschild and Rhee also investigated the possibility that high-reputation firms suffer stiffer market penalty because they get more media attention. The authors

PHOTOGRAPHY: GETTY IMAGES

counted news articles at the time of recalls of the highest-reputation firm and the lowest — at the time those were Lexus and Hyundai, respectively. Again, results were unambiguous. "When Lexus had a recall, there were many more articles about it than when Hyundai did," Haunschild says. Recalls get more publicity when firms are well-known for quality and when the recall affects many people.

### Effects on Demand for Cars, Toys, Food

Product recalls can slow sales, and sometimes consumers are even reluctant to buy from rival firms producing products within the same category. Automotive recalls date to 1966 and the birth of NHTSA in the wake of the success of consumer advocate Ralph Nader's 1965 book, *Unsafe at Any Speed*. That first year, manufacturers issued 58 recalls, affecting 982,823 vehicles. Recalled vehicle numbers have varied over the past decade, but the general trend indicates numbers are rising. In 2008, NHTSA announced 22.5 million vehicles in 781 recalls, but in 2009 the numbers fell to 570 recalls, affecting 17.8 million vehicles.

In years past, unbiased information about product quality was generally unavailable, certainly compared to the plethora of independent sources available today. Back then, consumers may have used recalls as a proxy for quality, according to economists Hoffer and his co-authors, Steven Crafton, formerly of George Mason University, and Robert Reilly of Virginia Commonwealth University. In a 1981 paper, they researched effects on demand for specific car models recalled, on models of the same make, and on the demand for similar models made by competitors (substitutes). The authors categorized recalls by severity, using data from NHTSA.

"What we found was that the market responded to a severe recall in the month after the recall," Hoffer says. "It did not respond to more minor recalls." While a severe recall affected demand of the model recalled, it did not affect other lines within the same car make. In particular, the Ford Pinto recall was found to affect not only Pinto but competitors' similar models. Consumers apparently inferred problems with similar-size models, regardless of the company of manufacture, according to the authors.

Another way the market can penalize firms is through equity response. Findings on shareholder wealth effects are mixed, however. Early work by economists Gregg Jarrell, currently of the University of Rochester, and Sam Peltzman of the University of Chicago in 1985 found effects greater than the direct costs of an automotive recall. Hoffer and his co-authors found no significant effects on auto firms' shareholders or on recalled firms' competitors.

More recent studies find that the stock market responds quickly to certain product defects, especially severe ones. For example, a recall on defective heaters cost shareholders less than an airbag recall. Economist Nicholas Rupp of East Carolina University found certain types of recalls caused significant shareholder loss, exceeding direct costs. "One of the conclusions I draw is that effects are limited unless they're persistent and serious recalls, sometimes resulting in injury or death or in cases where the media piles on," he says. Rupp measured the dollar value shareholders lost under certain recall characteristics, in order to identify attributes that cause significant losses. Particularly costly, he notes, are recalls of new makes and models "where consumers don't have much information and then suddenly they get this news." Minor recalls of heaters, defrosters, or air-conditioning units were not costly whereas airbag recalls were. Airbag recalls, in 1983 dollars, cost between $136 million and $162 million in equity losses, he estimated. Highly rated companies — those with AAA bond ratings — had the most

## The Private Component of Product Safety Testing

Before consumers became more sensitive to product safety, the knowledge gap between the buying public and product makers loomed large. That's when Underwriters Laboratory (UL) got started. UL today dominates the independent testing market, with 64 labs, testing, and certification facilities that serve customers in 98 countries. Founded in 1894 by an electrical engineer, UL first catered to insurance firms wanting to gauge fire risks associated with new electric appliances. UL developed testing for the hazards, and from there, the product list grew.

Today, 20 billion UL-approved labels go on 72,000 manufacturers' products annually. Getting UL certification is voluntary, for the most part, and procedures and standards remain unregulated. In some cases, government testing standards may apply, and UL also has played a large role in promulgating some of the standards.

In the 1970s, Underwriters Laboratory investigated 10,000 incidents of television fires, and developed federal television standards adopted and still used by the Consumer Product Safety Commission (CPSC). UL conducts quarterly product tests at factories to monitor quality, and companies pay for the tests and the use of the UL label, now a standard symbol of quality in the marketplace.

As recall numbers have grown, so has this private market for raters and certifiers. Such groups range from published "lists" to private labs like UL. Many are authorized to inform and certify products for government agencies such as the CPSC and the Occupational Safety and Health Administration (OSHA).

In other fields, bond agencies rate issuers, health-care raters grade hospitals, *Consumer Reports* magazine and J.D. Power and Associates rate products and services.

In 1988 OSHA established a list of recognized private laboratories to certify and test the products that must conform to the agency's standards. Today, 15 private labs are recognized on OSHA's roster. — Betty Joyce Nash

to lose from a recall announcement.

Economists Suresh Govindaraj and Bikki Jaggi of Rutgers evaluated in 2004 the market reaction in a specific case, the recall of the brand of tires linked to Ford Explorer rollovers. Market losses again exceeded direct costs for this firm. The authors also found that tire competitors gained market value, "probably because their products were substitutes for the products affected by recall."

Another study documents how consumer perceptions produce these spillover effects to other products. The 2007 toy recall that covered items containing lead paint represented an 80 percent increase in the number of recalled kids' toys over a two-year period. Economists found industry-wide effects. Even infant/preschool toy manufacturers without recalled products suffered a 25 percent decline in sales. Overall holiday sales for similar products by manufacturers named in the recalls fell by about 30 percent, compared to other products sold by the same makers.

Efforts to observe how people make decisions and inferences can prove useful to policymakers, according to one of the paper's co-authors, economist Seth Freedman, a doctoral candidate at the University of Maryland. After the toy recalls, Consumer Product Safety Commission laws were strengthened. "If consumers punish the manufacturer enough, then the manufacturer will have incentive to produce safe toys," he says. "But if consumers can't direct the punishment to a specific target, then the manufacturer may have incentive to produce at lower quality." He was referring to the multiple suppliers of toy parts to a wide range of companies. Since people didn't know exactly which toys were made by suppliers using lead paint, purchases of toys that were in the recalled category declined generally.

Uncertainties about market response remain. For example, toy sales among nonrecalled categories didn't suffer, even of those firms that were hit by the recall. But Freedman points out that it's unknown whether consumer preference or the increased advertising and promotion by the company facing recalls were responsible. Freedman and his co-authors also found capital market losses at the time of the recalls but could not associate the losses with particular recalls.

Recent research has investigated spillover effects in the pharmaceutical industry. John Cawley of Cornell University and John Rizzo of Stony Brook University published a National Bureau of Economic Research working paper in 2005 using the withdrawal of a drug combination (fen-phen) from the market. The drug was withdrawn in 1997 for potentially fatal side effects. The paper found that competitor drugs benefited from that withdrawal.

Food recalls may represent the greatest threat for firms caught in the growing web of the supply chain when things go wrong. Those can be especially dangerous and costly, and may explain why food companies account for 75 percent to 90 percent of product recall insurance coverage, introduced in the late 1980s after Tylenol tampering. Demand for such insurance has been growing at a rate of about 30 percent a year. While most food companies don't have product recall insurance because it's expensive, demand is growing, according to insurers who offer these types of policies. The insurance can cover direct and indirect losses.

While the cost of auto and drug recalls have been investigated, there's less research about product recalls of food despite recent illness outbreaks involving hamburgers, fruit juices, prepared meats, fruits, and vegetables. Agricultural economists Victoria Salin of Texas A&M University and Neal Hooker of Ohio State University investigated stock market reaction to four food recall events of microbiological contamination. Results varied by product, company size, scope, and severity. Returns to shareholders in some cases fell, but stock market reaction could not be detected in other incidents.

The empirical evidence that detects effects on firms in the case of recalls is hard to arrange and decipher, given the wide range of products, severity, timing, and reputation of firms. While less-severe recalls may be nonevents for firms, one certainty stands out: In the case of a major defect that causes illness or death, even a reputable firm will be penalized not only by regulators but also by the hand of the market.

"The market is efficient at meting out justice," Rupp says. "The market will punish and reward accordingly." **RF**

## Readings


Crafton, Steven, George Hoffer, and Robert Reilly. "Testing the Impact of Recalls on the Demand for Automobiles." *Economic Inquiry*, October 1981, vol. 19 no. 4, pp. 694-703.

Freedman, Seth, Melissa Kearney, and Mara Lederman. "Product Recalls, Imperfect Information, and Spillover Effects: Lessons from the Consumer Response to the 2007 Toy Recalls." NBER Working Paper no. 15183, July 2009.

Rhee, Mooweon, and Pamela Haunschild. "The Liability of Good Reputation: A Study of Product Recalls in the U.S. Automobile Industry." *Organization Science*, January-February 2006, vol. 17 no. 1, pp. 101-117.

Rupp, Nicholas. "The Attributes of a Costly Recall: Evidence from the Automotive Industry." *Review of Industrial Organization*, August 2004, vol. 25, no. 1, pp. 21-44.

What is the role for policy in the private decision to vaccinate children?

# Advancing Immunity

BY RENEE COURTOIS

Ten years ago the United States declared that widespread transmission of the measles — one of the world's most infectious diseases — had been eliminated. No small feat considering that 50 years ago virtually everyone in the United States got the disease before the age of 20. As many as 4 million Americans contracted the disease each year; 400 or 500 died, while about 48,000 were hospitalized and 1,000 left with chronic disabilities like brain damage or deafness.

Vaccinations are at the root of this dramatic improvement. Nowadays, most years see about five dozen cases of the measles in the United States. In 2008, the year-end total of a mere 140 cases was the worst in years. As with all modern-day outbreaks, the disease was imported from foreign visitors to the United States or from U.S. residents who traveled abroad and acquired measles in other countries experiencing outbreaks. Once in the United States, 90 percent of infected people had not received the measles vaccination or their vaccination status was unknown, according to the Centers for Disease Control and Prevention.

Though small in relative terms, recent outbreaks are a reminder that containment of vaccine-preventable diseases depends critically on the number of people in the population who choose to get vaccinated. If enough people are immunized, they collectively create "herd immunity" — with sufficiently few susceptible people in the population, the disease is unable to spread, protecting those who are not vaccinated by medical necessity, choice, or because they are too young.

That rate is determined by a mathematical formula based on factors including the vaccine's rate of failure and how easily the disease is transmitted. Professor Matthew Davis at the University of Michigan says the rule of thumb is that it takes about an 80 percent vaccination rate against a disease to provide herd immunity to the other 20 percent. But for a highly infectious disease like the measles — which will infect nine of 10 susceptible people who come into contact with it — as much as 95 percent of the population must be vaccinated to provide herd immunity.

About 67 percent of children aged 19 to 35 months receive the broadest set of vaccinations recommended by the CDC, according to the latest data available. Though below the 80 percent mark, herd immunity is not necessarily threatened since vaccination rates are much higher for each individual disease. For example, Idaho, the state currently with the lowest total vaccination rate, still enjoys coverage above 80 percent for most vaccines. By and large, it is the case that most children receive most vaccines.

But that's for the nation as a whole; there are pockets of the country — sometimes as narrow as the community or school level, for which data are scarce — with a relatively higher rate of unvaccinated individuals. "That suggests there are areas that are more at risk of getting these vaccine-preventable diseases than others," says Davis. In some schools, as many as 15 percent to 20 percent of students are unvaccinated. Modern measles outbreaks tend to be concentrated in unvaccinated populations, such as members of the same religious congregation or young classmates in communities where a culture of natural medicine is prominent.

The reasons behind widely different vaccination rates across regions are not entirely understood by the health care community. One clear part of the explanation is that requirements differ dramatically across states (vaccine recommendations can be enforced only at the state level). According to the Centers for Disease Control, all states require vaccinations against diphtheria, tetanus, pertussis (whooping cough), polio, and measles prior to kindergarten entrance through 12th grades. States have mixed vaccination requirements for other diseases, such as mumps (47 states plus Washington, D.C.), and varicella or chickenpox (44 states plus D.C.), among others.

But all states allow for exemptions that permit a child to attend public school unvaccinated. Medical exemptions, such as an allergy to a component of the vaccine, are allowed in all states, though well under 1 percent of children fall into that category. Religious exemptions are allowed by 48 states and Washington, D.C. — West Virginia and Mississippi are the exceptions — and 20 states allow philosophical exemptions.

The ease of being granted an exemption also is a factor. Some states

## Marked Improvement

New cases of many diseases have fallen dramatically since vaccines were introduced, though experts note that some diseases, like pertussis, are on the rise.

| | Measles* | Mumps* | Pertussis* (Whooping Cough) |
|---|---|---|---|
| 1950 | 211.01 | N/A | 79.82 |
| 1960 | 245.42 | N/A | 8.23 |
| 1970 | 23.23 | 55.55 | 2.08 |
| 1980 | 5.96 | 3.86 | 0.76 |
| 1990 | 11.17 | 2.17 | 1.84 |
| 2000 | 0.03 | 0.13 | 2.88 |
| 2009 | 0.02 | 0.65 | 4.40 |
| Date Vaccine Introduced | 1963 | 1967 | 1949 |

*Per 100,000 people in population

NOTE: A national measles outbreak spanning 1989-1991 boosted new case numbers for 1990.
SOURCE: Centers for Disease Control and Prevention. Data for 2009 calculated by author using CDC and Census data.

require only a signature on a form, whereas others require notarized personal statements, annual reviews, and input from local health officials. A 2006 study in the *Journal of the American Medical Association* (JAMA) found that exemptions doubled between 1991 and 2004 in states with a relatively easy exemption process, with no obvious increase occurring in states with a harder exemption process. The study found that states with a stricter exemption process had lower rates of exemptions and, consequently, lower incidence of the diseases in question.

### The Costs and Benefits of Vaccinations

Vaccines are heralded as one of the single greatest public health triumphs the world has seen. Thanks to vaccines, deadly and debilitating diseases have been kept at bay, virtually wiping out the incidence of illnesses such as mumps, polio, and measles. This has freed health professionals to focus on chronic diseases like cancer. The demonstrated effectiveness of vaccines in preventing disease clearly provides an individual with an incentive to get vaccinated.

Vaccines work by injecting the body with a mild or dead form of a virus, providing the immune system the opportunity to figure out how to attack it. The immune system has a memory: If ever again confronted with the disease, it will recall the blueprint to the antibodies. Edward Jenner discovered the method in the 18th century when he observed that milkmaids rarely contracted the deadly smallpox disease, which he hypothesized was because they contracted the less-virulent version that afflicted cows. Their bodies were able to fend off cowpox and establish immunity to smallpox in the process.

Despite proven benefits of vaccinations, some parents choose not to vaccinate their children. One reason is that vaccines are a victim of their own success: As diseases like measles and polio decline in numbers or are eradicated, so dies the memory and fear of them. And in many states the exemption process is less burdensome than actually getting the many required rounds of vaccinations viewed by some parents as excessive.

Financial costs are an impediment, sometimes leaving areas with many low-income families vulnerable. Vaccines are funded through a mixture of private and public sources. For those with health insurance, differing state regulations mean insurance coverage of vaccines varies. Few state regulations mandate national recommendations as a guide, though, and the skyrocketing expense of the full recommended regimen of vaccines increasingly means that many are not covered by insurance.

Public assistance is available for children not covered or underinsured. The U.S. government under President Clinton enacted the Vaccines for Children program that subsidizes child vaccinations for the vast majority of children whose private insurance doesn't cover them. A growing number of states also have "universal purchase" programs in which the state purchases and distributes vaccines to both public and private immunization providers at lower prices.

Despite such steps, financial barriers persist. Families often don't know they're covered by government programs, according to Davis, and that has limited their success.

But parental fear of vaccine safety is by far the largest stated reason for avoiding vaccinations. Nearly one in eight parents refuse at least one recommended vaccine, according to Davis and coauthors in a 2010 study, especially newer vaccines for chicken pox and human papillomavirus (HPV). One in five believes some vaccines can cause autism in otherwise healthy children.

Interestingly, it's not that such parents think vaccinations are ineffective; even vaccine refusers overwhelmingly believe vaccines are able to prevent disease, according to Davis and his coauthors. It's that they think vaccinations may be more harmful than the diseases they prevent, given the low probability of catching them.

Experts say the risks from vaccines are small. Mild reactions are common — about one in four children experience low-grade fever following the diphtheria/pertussis/tetanus (DPaT) shot, for example — but severe reactions are very rare. One in 1 million children will experience seizures or brain damage after the DPaT shot. Severe effects are so rare that it is hard to know if they're caused by the vaccine, according to the CDC.

Experts view the parental fears of such small risks as a major threat to public health since they have led to decreased vaccination rates and subsequent outbreaks in other countries. After a study linking the MMR vaccine to autism — a study that was discredited and retracted earlier this year — was published in a British journal in 1998, MMR vaccination rates in England dropped over 10 percentage points in six years. England saw 56 measles cases in 1998, and by 2008 there were 1,370. A similar story occurred in the northern region of Nigeria after people shunned the polio vaccine out of AIDS and other concerns. Following a rapid resurgence of polio in that country, experts say immunization against polio in Nigeria is in danger of failing.

The lesson is that as immunization rates fall, there can be a tipping point at which even the vaccinated face increased risk since no vaccine is perfectly effective, and diseases start to dramatically resurge. But where that tipping point is, experts aren't sure.

### Guiding Vaccination Policy

In the matter of vaccinations, there is a natural tension between self-interest and public welfare. How should policymakers weigh public health with private freedom concerning health choices? Researcher Alison Galvani of Yale University and various colleagues have developed game theory models in which an individual's choice depends on the strategies chosen by others. They used these models to analyze the vaccination rates that could prevail under a purely voluntary vaccination policy regime compared to vaccination rates that would maximize

the welfare of the population as a whole.

If the decision to vaccinate was left purely up to self-interest, individuals (and parents, in the case of a child) would decide whether to vaccinate based on their perception of the costs and benefits of doing so. But if everyone else is immune, a vaccine poses little individual benefit. For individuals who view vaccines as especially risky or the risk of disease as low, their best choice will be to go without. Therefore, in the Nash equilibrium — a game theory outcome in which no individuals can improve their lot given the strategies chosen by others — the total vaccination rate is likely to be lower than socially optimal.

The outcome, in this case, would be greater illness since a nonimmunized person is more likely to catch and spread the disease. This meshes with empirical studies: Several have found that communities with lower vaccination rates had higher infection rates even among vaccinated children.

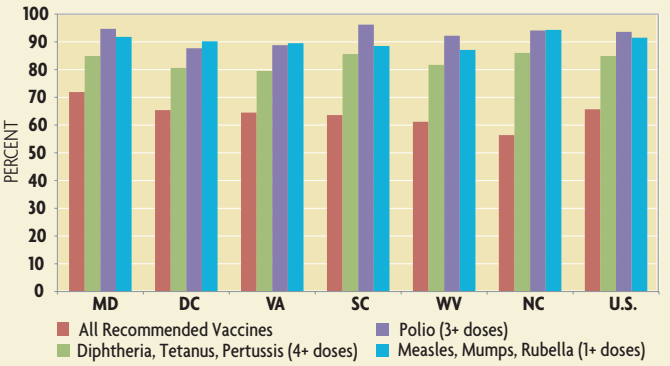
The utilitarian approach is arguably more characteristic of the vaccination policy we have today: Vaccine mandates are intended to maximize the welfare of the entire population, at least where disease control is concerned. School mandates have been by far the most effective way to increase vaccinations. However, some requirements test the limits of public tolerance for sacrificing freedom for the greater good like the newer adolescent vaccines for sexually transmitted diseases that have proven unsavory to many parents.

Exemptions are a way to modify the utilitarian approach to allow a greater scope for private preferences. But they undermine the benefits provided by mandates since exemptions provide an opportunity to "free ride" off the immunity of the herd, just like in the Nash equilibrium. Those exempted get the benefits of immunity through the herd without the hassle, financial costs, or perceived risks of vaccination.

Both strategies seem to imply that policy should also focus on directing private choice toward the optimum; that is, to bring the Nash and utilitarian outcomes closer together through strategies that increase voluntary vaccinations. This means understanding people's decisions not to vaccinate and improving accurate public information about the costs, benefits, and administration of vaccinations. This could be particularly helpful concerning the risks that a vaccine poses for a given individual, since those fears are one of the biggest current threats to herd immunity and have led to reduced vaccine uptake and outbreaks in the past.

**Fifth District Coverage**

Percent of children aged 19 to 35 months receiving all recommended dosages for select vaccines




SOURCE: Centers for Disease Control and Prevention, 2008 National Immunization Survey

Research indicates that the people most trusted to convey information about vaccine safety are doctors. So Davis suggests that any efforts to address the public's concerns over vaccine safety have to involve individual physicians to be effective. There's risk with any procedure or medication, he says, but it's hard to know whether a given individual will experience side effects as he or she receives something for the first time. "For some people the vaccine safety concerns are outweighing the possible benefits in their minds, and that's a very important conversation that doctors need to have with patients and parents."

If all else fails, Galvani and her colleagues suggest that policymakers shouldn't discount appealing to altruism as a way to increase voluntary vaccinations. Parents aren't always conscious that the private vaccination decision has public consequences, according to Davis. He says parents who are inclined to refuse vaccines often ask why they should give the polio vaccine, for example, to their children when chances are imperceptibly small they'll catch the disease.

"My answer to them is, 'Why do you think your child is not likely to get polio?' They pretty quickly get to the fact that their children are protected only because other parents have vaccinated their children against polio." No parent, he says, enjoys realizing their children would be free-riding on the immunity of other children. **RF**

*Christina Zajicek contributed to this article.*

## Readings


Bauch, Chris T., Alison P. Galvani, and David J.D. Earn. "Group Interest Versus Self-Interest in Smallpox Vaccination Policy." *Proceedings of the National Academy of Sciences of the United States of America*. Sept. 2, 2003, vol. 100, no. 18, pp. 10,564-10,567.

Boulier, Bryan L., Tejwant S. Datta, and Robert S. Goldfarb. "Vaccination Externalities." *B.E. Journal of Economic Analysis and Policy*, May 2007, vol. 7, issue 1, article 23.

Geoffard, Pierre-Yves, and Tomas Philipson. "Disease Eradication: Private vs. Public Vaccination." *American Economic Review*, March 1997, vol. 87, no. 1, pp. 222-230.

Omer, Saad B., et al. "Vaccine Refusal, Mandatory Immunization, and the Risks of Vaccine-Preventable Diseases." *New England Journal of Medicine*, May 7, 2009, vol. 360, no. 19, pp. 1981-1988.

Salmon, Daniel A., et al. "Factors Associated with Refusal of Childhood Vaccines Among Parents of School-Aged Children: A Case-Control Study." *Archives of Pediatrics and Adolescent Medicine*, May 2005, vol. 159, no. 5, pp. 470-476.

# The Generosity Cycle

## Charitable giving during downturns

BY BETTY JOYCE NASH

*United Way volunteers sort shoes at a shelter. The organization and others like it are categorized as public-society benefit groups.*

Money trouble finally forced Charleston, S.C., Symphony Orchestra to suspend its 2009-2010 season. Over in Charleston, W.Va., a foundation announced it's running out of money. It will fold this fall after disbursing its $9 million remaining dollars. The Clay Foundation had granted $100 million over its 23-year history.

Charitable contributions nationwide have declined, as in previous downturns. Foundations and other giving sources also are coping with a slide in asset values, affecting their own operations and those of the nonprofits they support.

In 2007, charitable donations had reached a record $314 billion, about 2.3 percent of GDP. The latest available report from the Giving USA Foundation estimates giving in 2009 declined 3.2 percent, after a 5.7 percent decline the previous year. (Giving numbers throughout the article have been adjusted for inflation.)

Yet Americans remain committed to philanthropy and often reallocate gifts, year to year, when money is tight. Giving in some categories increased, according to economist Una Osili, who directs research at the Center for Philanthropy at Indiana University. Some categories of giving that had declined the previous year actually rose. In 2008, for instance, giving for public-society benefit organizations, such as United Way, rose slightly, but declined in 2009 by 4.2 percent. However, giving for human services groups rose 2.7 percent after having declined the previous year.

Philanthropy professionals have been investigating patterns of giving during the downturn to see what they can learn. The general conclusion is that things could be worse. "Giving does recover after recessions," Osili says. "But it does take some time."

### Recessionary Giving and "Crowding Out"

Giving USA estimates that, in addition to human services increases, sectors such as health and international aid benefited despite the recession. "This focus on vital needs is consistent with what historians tell us happened during the Great Depression," said Patrick Rooney, executive director of the Center on Philanthropy, in a press release. Giving USA Foundation, also affiliated with the center, publishes a report of the same name annually. It estimates contributions using Internal Revenue Service tax data on itemized gifts, government estimates for economic indicators, and data from other research institutions.

Individual giving represents about three-fourths of all contributions, and it remained unchanged, in real terms after falling by 6.3 percent in 2008. Bequests, however, plummeted by nearly 24 percent, after falling by about 6 percent the previous year (due to unexpectedly large sums reported by the Internal Revenue Service for estate tax returns filed late in 2008). Foundation giving comprises 13 percent of all charitable contributions, and that category declined by 8.6 percent in 2009.

Religious giving represents the biggest share of all contributions. After increasing by 1.6 percent in 2008, the category fell slightly, by 0.3 percent, in 2009. The demand for charity services has expanded during hard times, and the share of donations to human services in 2009 grew by 2.7 percent after a stunning decline of 16 percent in 2008. Giving to foundations fell by 7.6 percent, after a whopping 22 percent decline in 2008; gifts to education groups fell again in 2009 by 3.2 percent. Arts, culture, and humanities sectors had another 2 percent decline in contributions.

But several categories received more in 2009 compared to 2008: Donations to environmental and animal organizations grew by 2.7 percent; giving for international aid increased by 6.6 percent, in real terms; giving for health causes increased by 4.2 percent.

Because giving is tied to economic health, individual donors and foundations watch market indices closely as they plan gifts. Bequests aren't necessarily timed with overall market indicators. Corporate giving is tied more closely to corporate profits than stock market performance.

The Giving USA Foundation has tracked the performance of charitable giving following the Depression. They found that from 1928 to 1934, itemized charitable giving fell 35 percent in real terms. It reached its 1929 level in 1937, fell slightly a year later, and exceeded its 1929 level in 1939.

During the Depression, however, foundations like Rockefeller, Carnegie, and Russell Sage kept giving generously, with Carnegie providing an additional $2 million in social welfare relief in the early 1930s. Lack of data, however, makes it unclear whether total foundation giving rose or fell in the 1920s and 1930s, and information about how quickly foundation assets recovered in the aggregate is also scarce. Historian David Hammack of Case Western Reserve University found in his studies about philanthropy in the Depression that wealthy donors switched to secular and away from religious giving.

PHOTOGRAPHY: UNITED WAY

There is also some evidence that government spending can "crowd out" private charitable giving. Jonathan Gruber of the Massachusetts Institute of Technology and Daniel Hungerman of the University of Notre Dame found that charitable church spending fell by 30 percent in response to New Deal relief spending. That explains the one-third decline in charitable church activity between 1933 and 1939. Partial crowd-out was also observed in research by Tom Garrett of the St. Louis Fed and co-author Russell Rhine of St. Mary's College in Maryland. Using data from 1965 to 2003, the authors found that increases in state and local government welfare and education spending did reduce charitable giving to these categories.

While the Great Depression is fertile ground for the study of philanthropy, the recession this time around isn't as severe. Later downturns provide clues about the future of giving. After the 1973-1975 recession, individual itemized giving exceeded its 1973 level in 1979, when giving rose to $52.7 billion, according to Giving USA. After the 1980 and 1981-1982 recessions, itemized individual contributions rose consistently, in real terms, even during the slide in the Dow Jones Industrial Average. That indicates no lag in giving after that recession.

Foundation giving, though, tells another story. From 1972 through 1975, foundation giving stalled out, and did not reach 1972 levels again until 1985. After the 1980-1982 slumps, foundation giving also fell before finally growing to $8.2 billion in 1985. That was 14 years after a previous peak of $7.9 billion.

## Coping in the Nonprofit Community

At the grass roots, community foundations are feeling the pain. The Coastal Community Foundation of South Carolina is one of about 800 local foundations in the United States; the foundation has about $130 million in assets. This community foundation manages a collection of funds for business, individual, or family donors. For instance, the CCF manages the family fund of low-country native and television talk-show host Stephen Colbert and his Ben & Jerry's "Americone Dream Fund." The fund receives a percentage of proceeds from the Colbert-named ice cream.

The CCF has worked with the Charleston Symphony for more than a year to stave off its funding problems, and continues to manage its endowment fund. The foundation manages some 550 other family or business foundations, each with its own cause or story.

"The funds together create a large mass so we can afford to hire investment managers," says Christine Beddia, director of marketing and communications. A mark of this recession, she notes, is that fiscal year 2009-2010 has seen the creation of fewer than 30 new funds. That compares to 55 established two years ago, in 2007-2008. Future funding may be precarious. Foundations employ formulas based on multiyear averages to disburse grants and those vary. Beddia expects grant-making may stabilize or decline as those averages incorporate asset-value declines in 2008 and 2009.

Foundation grant-making fell in real terms in 2008, by less than 1 percent nationwide, but 2009 may be worse, according to the nonprofit Foundation Center. Two-thirds of foundations surveyed anticipated cuts in the number and size of grants in 2009, with overall foundation giving expected to slide. Some survey respondents expected to tap endowment principal.

The Z. Smith Reynolds Foundation in 2009 granted money based on 2007 fund values, a peak. "So there is a two-year delay between our actual trust value and our spending capacity," says executive director Leslie Winner. "In 2011 our spending capacity will be at its lowest, so our trough is yet to come." The annual average value of the trusts has dropped about one-third. Besides cutting administrative expenses, the Winston-Salem, N.C.-based foundation has cut back on multiyear grants. Separately, it has reallocated money into a coalition of nonprofits working to prevent foreclosures. The recession has also prompted soul searching. "If we thought home ownership was a good asset-building strategy in the past, do we think it will be in the future?" Winner asks. "We are actively rethinking this."

Among grantees, foundations have seen layoffs and mergers to cope with declining revenues. "This is a time when we're seeing partnerships," Osili says. "Nonprofits are building synergies with the public, government officials, and other nonprofits."

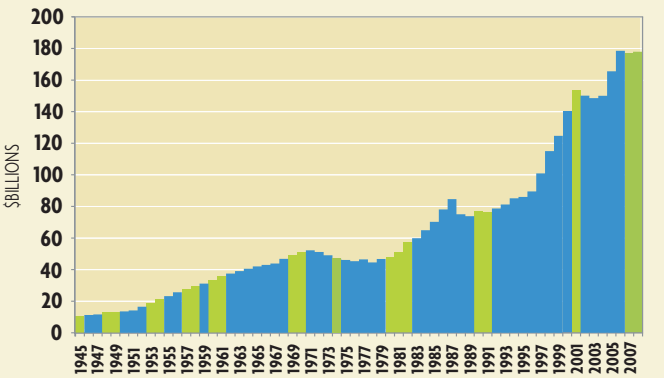
## Who Gives to What and Why?

The motive for giving falls into a couple of categories: altruism and exchange. An altruist simply wants to help people, pure and simple, expecting nothing in return. Others give because they want something, say, a tax break or public recognition.

Americans are generous, and endowments from organizations founded by wealthy industrialists — Andrew Carnegie and John D. Rockefeller come to mind — have

*continued on page 35*

**Itemized Individual Charitable Giving Post War (1945-2008)**




NOTES: Green bars indicate recession years. Data exclude estimates of amounts given by non-itemizing households, foundations, corporations, and estates.
SOURCE: Center on Philanthropy at Indiana University for *Giving USA Spotlight*; data from Internal Revenue Service/Statistics of Income office

# HIGH-SPEED CHASE

## TAKING BROADBAND TO THE LIMIT

BY BETTY JOYCE NASH

Fast, reliable Internet access shrinks time and distance like no predecessor technology. It's hard to exaggerate the significance of this "broadband" service that packs data through lines, over airwaves, or via satellite at a clip fast enough for a doctor to interpret an X-ray or monitor a patient's chronic disease from afar in real time. A firefighter can download a building plan, in the heat of the moment, via a mobile device. Broadband can also bring big businesses to regions that otherwise might get bypassed.

Most of the people who want broadband in the United States have it already. But bringing everyone up to speed gets iffy, especially in remote places, where low subscriber numbers might not justify the cost of deploying wire and fiber. This "last-mile" problem led the government to wire segments of the nation with electricity and telephone lines in the previous century.

Government grants have been spurring investments in "middle-mile" fiber installation, which will help, but taxpayers can't fund every last mile. Could the broadband gap ultimately be closed using wireless configurations, satellite, and even existing power lines?

### The Broadband Advantage

Worldwide, governments want citizens connected via broadband — it enhances productivity, innovation, and may cut costs. Economist Robert Litan of the Kauffman Foundation and the Brookings Institution, for example, has written about broadband's potential to deliver health care and information to the elderly and the disabled. Remote medical monitoring and two-way communications between patients and health care providers could delay or even eliminate the need for institutionalized living. Broadband would also make it easier for both populations to work, if they chose.

When people can't access broadband, it's due not only to geography, as in the case of rural residents, but also to sociology, especially relating to the elderly, disabled, minorities, or poor. Most people who can easily be connected *are* connected. Many of those without broadband have decided against it for a variety of reasons. Thirty-eight percent of those rural households without broadband, when asked, say they don't need it, or they're not interested. Affordability is cited by 22 percent of rural nonusers (and, tellingly, 28 percent of urban nonusers). But only 11 percent of rural households say they don't use broadband because it's not available. About 65 percent of rural households, compared to 69 percent of urban households, already have Internet use "at least somewhere." These numbers come from *Digital Nation*, a report published by the U.S. Department of Commerce based on data collected in October 2009.

So as the above numbers show, it's not only a last mile problem, it's a "last user" problem. The push for affordable broadband access in every nook and cranny has been a stated national goal since 2004. Rural schools, health clinics, hospitals, and businesses may benefit most from these high-capacity circuits that can improve learning, medical care, and economic development.

Money from the federal government's stimulus package aimed at expanding broadband access nationwide, $7.2 billion in all, is starting to roll into the Fifth District. A North Carolina nonprofit, MCNC, which runs the North Carolina Research Education Network got $28.2 million in broadband recovery money for middle-mile deployment in eastern and western parts of the state. The idea is to expand the optical footprint so it's faster, more robust, and more reliable, says Noah Garrett of MCNC. The nonprofit has a bigger fiber ring project on the drawing board, worth $100 million, if money from other grants comes through. "What you'll see with the expansion, the middle-mile, you're going to start seeing more households having more affordable access," Garrett says, in the hope that commercial providers install the last mile.

The Federal Communications Commission (FCC) estimates that it could take another $23.5 billion to bring every home in the nation up to speed, including about $13 billion to reach the most rural areas. But is it necessary? The latest FCC report on wireless says 92 percent of the rural population has at least one mobile broadband provider already, enabling wireless Internet access via mobile phones or laptops. Wireless isn't a perfect wire-line substitute but may serve rural areas more economically. Each generation of wireless improves on the last, with fourth-generation (4G) technology upon us. If speed and customer satisfaction

*Could the broadband gap ultimately be closed — or at least narrowed — using wireless configurations, satellite, and even existing power lines?*

compare favorably to fixed service, nonterrestrial technologies such as 4G can bring the cost of closing the broadband gap to roughly $10 billion.

Mobile wireless has developed in scope and sophistication, and it's also become more concentrated, with the two biggest providers, AT&T and Verizon, accounting for 60 percent of subscribers and revenue, according to a May 2010 FCC report to Congress on wireless penetration. Both firms continue to gain market share. As smart phones and mobile computing devices proliferate, wireless use grows. The iPhone, for instance, has driven data traffic on AT&T's mobile network up by 5,000 percent between mid-2006 and mid-2009.

### National Network

By 2013, about 90 percent of the nation may have access to peak download speeds of more than 50 megabits per second, according to the FCC, compared to the average (actual) speed of about four megabits per second today. Advertised and actual speeds depend, however, on infrastructure, service take-up rates, and patterns of use. If everyone on a circuit logs on, then speed can slow. When all is said and done, the FCC's goal is affordable 100-megabit-per-second download speeds to 100 million homes by 2020 and one gigabit-per-second connections to institutions — libraries, schools, hospitals, military installations, and the like.

*Digital Nation* found that as of October 2009, 63.5 percent of U.S. households used broadband (technologies faster than dial-up); 66 percent of urban and 54 percent of rural households accessed broadband. Rural households were more likely to use dial-up, 8.9 percent, than urban ones, 3.7 percent. Also, U.S. households with children are more likely to have Internet service than those without children, so the per-household figures may understate use.

The FCC's National Broadband Plan released earlier this year outlines changes, not only to subsidize broadband extension but also to auction underused broadcast spectrum for mobile communications. The FCC wants to switch the universal service funds that telecoms currently pay to subsidize rural telecommunications, including discounts to poor households and services to schools and libraries, to fund broadband diffusion.

Wire-line services require large fixed costs, and while reducing these costs could spur competition, that's unlikely to happen over vast geographical areas. Digging and burying fiber — the dominant desired transmission method for the foreseeable future — can cost $100,000 a mile, and so it makes sense to deploy fiber simultaneously with water or sewer pipes. Some communities have these build-out policies in place.

And more competition could emerge from wireless by cutting costs of entry and expansion through access to spectrum, according to the FCC plan. Economists Robert Crandall and Hal Singer noted in a recent Brookings Institution report that most U.S. households have at least three broadband technologies from which to choose and, in most service areas, even more suppliers.

Broadband deployment in the United States is nearly ubiquitous, with the exceptions previously noted. And competition exists in most markets, a fortuitous accident because coaxial cable for television and copper wires for telephone developed separately. Both worked to deliver broadband.

Today, most people can choose between two wire-line platforms: 78 percent of housing units are located in census tracts with two providers; 13 percent have only one, according to the FCC. However, data are inadequate to show whether price and performance offer enough competition for a variety of reasons, including the fact that many people buy bundled services from cable or telco providers.

### Power Lines

When the federal government began to support power line extension in 1935, barely 10 percent of farms had electricity and 20 percent had telephone service. Private firms considered the remote investments unfeasible. Today, the U.S. Department of Agriculture loans money to rural electric cooperatives, and since 1949 the universal service fund has subsidized telephone lines in remote areas. Telephone companies often charge customers a fee to recover that cost. The idea is for customers in remote regions to receive service priced similarly as in urban regions.

In rural America, that last mile can be long. And expensive. For fixed broadband, last mile can mean trenches, and digging represents most of the cost. Exclusive of any long-term spillover benefits, broadband so far has benefited its private suppliers handsomely. Economist Shane Greenstein and his co-author Ryan McDevitt, both of Northwestern University, in a 2009 National Bureau of Economic Research paper found that private investment diffused broadband effectively. As broadband became faster, more reliable, and available, households upgraded to speedier service, paying more along the way. Internet access revenue reached $39 billion in 2006, with broadband accounting for $28 billion of GDP, with $20 billion to $22 billion associated with household use. Of that amount, broadband's deployment created approximately $8.3 billion to $10.6 billion of new GDP. In part, Greenstein and McDevitt found that price indices had undervalued gains to users of broadband, and yet that's what motivated upgrades. In short, the authors' recalculation of

conventional GDP estimates show that the gains to broadband suppliers from creating new revenue covered investments in urban and suburban areas.

But reaching low-density locations may not be profitable. "Once the costs exceed one or two thousand dollars per household, then the profitability gets dicey. Prices have to increase or payback periods have to increase," Greenstein notes.

No one knows that better than Maureen Kelley, who formerly worked for Apple Computer. She now lives in rural Nelson County, Va., where she serves as economic development director. The county has gotten $1.8 million in broadband stimulus money to install 31 miles of fiber and four wireless tower sites, ultimately connecting schools, a library, seven county facilities, and the Blue Ridge Medical Center, the local health clinic.

"What we are putting in is the infrastructure that ISPs have not deployed in our very rural area," she says. Internet service providers will be able to lease strands from the county-owned and operated network to connect homes. Of the 8,000 households in the county, more than half now use dial-up.

The county's electric cooperative is deploying fiber over existing power lines. "They have given us a sweet pole attachment gift," she says, referring to the cooperative's fee waiver. "This is so much like rural electrification." While underground fiber installation protects wires from weather, aerial deployment is cheap by comparison.

While Nelson County is stringing fiber over telephone lines, another technology may also help diffuse broadband. After a shaky and unpredictable start, using the lines themselves still holds promise. Conceived in part to create a smart grid to monitor electricity use, the technology can transmit data with speeds comparable to DSL and cable modem. While power lines are installed everywhere, the technology has yet to be widely deployed, as it continues to evolve.

### Home-Grown Fiber

Wilson, N.C., and Salisbury, N.C., are investing in fiber systems. Wilson sold bonds to finance its "Greenlight" system of cable, broadband, and telephone service. Bristol, Va., located in the southwest corner of the state, is often cited as an example of the home-grown fiber initiative. Bristol Virginia Utilities first deployed its OptiNet fiber in 1998 among substations and city offices for internal use, but soon started serving businesses and homes. Since then, Northrop Grumman Corp., has located a 90,000 square-foot computing center in Lebanon, Va., population 3,214. Although the firm was driven to the remote region, in part, by the politics of its contract to serve as the state's technology provider, the location would have been unworkable without broadband. A Canadian IT services company, CGI, has also put down roots in Lebanon.

Combined, the two companies employ about 700 people, according to Larry Carr, executive director of the Cumberland Plateau Co., the nonprofit formed to oversee implementation in a multicounty area. "We tried to work with the incumbents to put the fiber into these areas so we would have a chance at recruiting Internet technology companies, but they weren't interested," he says, adding that low-density populations in these hard-to-reach locations makes profitability uncertain. Carr says his nonprofit has applied for a piece of the federal stimulus money for middle-mile infrastructure that can bring broadband closer to residents on the last mile.

The federal dollars allocated for broadband won't finish the job of connecting every household. Also, regulatory uncertainty hangs over FCC efforts. In April a federal appeals court found that the FCC lacks authority to regulate broadband services. The FCC had sought to ensure that all Internet content is treated equally by providers, after Comcast slowed customers' access to BitTorrent, a program used to share large video files. Comcast then challenged FCC authority over broadband. The ruling allows providers to control access to some content or price access to it. The FCC chairman, Julius Genachowski, has proposed an alternative, but results at press time were unclear.

The ruling's effects, if it stands, on future applications like the next YouTube are unknown. The Internet has developed over the past 20 years without interference from carriers. "That experience has yielded obvious growth," Greenstein says. "Part of the reason [for that growth] is the Silicon Valley software developer doesn't worry about who's delivering it in Boston or Dallas: Everybody has been prevented from interfering with the message."

So far, market-driven policies have diffused broadband widely and quickly despite the pockets of people who remain un- or underserved. Whether public efforts can ultimately solve that problem — and whether it actually is a problem worth solving, given the costs — remains unclear. As innovation flourishes, so does uncertainty as broadband creeps toward its final frontier. **RF**

## Readings


*Connecting America: The National Broadband Plan*. Washington, D.C.: Federal Communications Commission, March 2010.

*Digital Nation: 21st Century America's Progress Toward Universal Broadband Internet Access*. Washington, D.C.: National Telecommunications and Information Administration, U.S. Department of Commerce, February 2010.

Greenstein, Shane and Ryan C. McDevitt. "The Broadband Bonus: Accounting for Broadband Internet's Impact on U.S. GDP." National Bureau of Economic Research Working Paper no. 14758, February 2009.

Hahn, Robert W., and Scott J. Wallsten. "An Economic Perspective on a U.S. National Broadband Plan." *Policy & Internet*, vol. 1, no. 1, article 5.

# Of Mines and Markets

BY BETTY JOYCE NASH

A recent explosion in a West Virginia coal mine in April killed 29 miners, and injured two. As of press time 31 miners have died in West Virginia's underground coal mines so far in 2010.

These tragedies have intensified public scrutiny of the industry, the labor market that serves it, and the regulatory structure that has grown up around it. West Virginia also lost 23 miners in 2006. Among other accidents, the number includes 12 killed in the Sago Mine blast near Buckhannon.

Workplace disasters raise legitimate questions about the role of market discipline in workplace safety as well as the effectiveness of regulation.

"Market discipline, if it works perfectly, produces an efficient amount of safety, not the maximal amount of safety," says Devra Golbe, an economist at Hunter College of the City University of New York. "Thus, even in a perfect market, the choices firms and workers make are not likely to result in an accident-free workplace, because safety is costly and some industries, like mining, are inherently risky."

The median number of days away from work in underground coal mining due to work illness or injury was 34 days compared to eight in all private industries, according to the U.S. Dept. of Labor's latest available data, 2008.

The recent blast happened at Performance Coal Co.'s Upper Big Branch Mine, a subsidiary of Richmond, Va.-based Massey Energy. According to the U.S. Mine Safety and Health Administration (MSHA), the mine appealed 77 percent of its "significant and substantial" violations from 2007 through 2009. Appeals have been increasing, in part, because of federal rules legislated after the 2006 Sago disaster. The laws hiked fines and the number of inspectors. Fines rise with the number of violations, so companies have a greater incentive to contest them. An appeal, however, can keep mines from the "potential pattern of violation" category, a status that could lead to a shutdown. Two-thirds of penalties are now appealed, overloading judges at the Occupational Safety and Health Administration.

Appropriate laws can enhance safety, but may also reflect prevailing politics. Laws may also fail to keep pace with changing industry expertise. For instance, standards to prevent explosions that can occur in the presence of high levels of combustible gases are said to be outdated.

Costs associated with accidents, in theory, give firms an incentive for safety because of lost production time, lawsuits, workers' compensation claims, increased insurance costs, and possible stock market losses. Massey now produces six days a week at some mines to make up for reduced coal output from Upper Big Branch to meet contract obligations. Its stock value fell following the accident. The firm also faces several lawsuits from pension fund investors. And Massey has said it did not carry business-interruption coverage for Upper Big Branch. Two years ago, Massey agreed to pay $4.2 million in criminal and civil penalties following the 2006 deaths of two miners after a fire at another Massey subsidiary.

The market for workplace safety may be "quite imperfect," Golbe says. "Moreover, in a labor market where jobs are scarce, the price for avoiding a dangerous job may be unemployment."

Economic theory suggests mines will have trouble attracting employees if they're unsafe. But information about accident risk may be unavailable or hard to decipher. Although with the strong mining tradition in West Virginia, the risks may be widely known.

The presence of contract workers also complicates the issue. Mine operators are ultimately responsible for contractor safety, according to Ellen Smith, managing editor of *Mine Safety and Health News*. "Percentage-wise, it's safe to say there are a higher number of injuries with contract workers," she says, citing the Blacksville No. 1 mine explosion in 1992, also in West Virginia. Contractors sealing a mine shaft didn't realize they should have taken methane readings.

Higher wages can reflect job hazards, although this compensating wage differential varies according to labor supply. For example, in West Virginia, the annual mean wage of explosives workers, roof bolters, extraction workers, and continuous mining machine operators, ranges from $42,320 to $50,500, according to the Bureau of Labor Statistics. The wages are higher than for service jobs, and above Raleigh County's median income of $38,672, according to the Census Bureau's American Community Survey. Most people there work in social or educational services, retail trade, or other service jobs; 9 percent work in agriculture, fishing, or mining.

Economist Clifford Hawley of West Virginia University suggests that in some mining areas of West Virginia, employers may exert monopsony power. (A monopoly firm is a single seller; a monopsony firm is a single buyer.) "Typically among nearby mining opportunities, it's rare that you have much competition, and so the miners' wages will be lower to the extent that there is monopsony power in the labor market," he says. A dominant firm like Massey Energy may also influence wages of smaller mines.

Mining jobs require skills but not college degrees. And in some mining communities "there's just not a lot for people without a college education to do," says Hawley. "Mine workers are not mobile enough to say, 'Well, I'll move out of West Virginia.' People in West Virginia are very tied to where they live; they are just not geographically mobile — that's by choice and by culture." **RF**

# INTERVIEW

# Justin Wolfers

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

**Classical economists such as Adam Smith and John Stuart Mill were interested in a wide range of issues that for later generations of economists were thought to be largely beyond the scope of their discipline. What makes people happy? What gives our lives meaning? How ought we to organize ourselves as a polity? Relatively recently, a number of economists have started to revisit those questions, to place economics squarely within the broader social sciences, where it was once understood to belong, while at the same time not eschewing the formal tools that have given economics so much of its analytical power. The work of Justin Wolfers, an economist at the University of Pennsylvania, exemplifies this broadening scope of inquiry. As stated on his faculty Web page, his research interests include labor, macro, political economy, economics of the family, social policy, law and economics, public economics, and behavioral economics. One research area not listed is monetary economics. However, he also has contributed to that field, both through his academic research and his professional activities. A native of Australia, he has worked at the Reserve Bank of Australia and is currently a visiting scholar at the Federal Reserve Bank of San Francisco. Wolfers also is a nonresident senior fellow at the Brookings Institution in Washington, D.C., where he is co-editor of the *Brookings Papers on Economic Activity*, and a research associate at the National Bureau of Economic Research. Aaron Steelman interviewed Wolfers at his office at the University of Pennsylvania in May 2010.**

PHOTOGRAPHY: TOMMY LEONARDI

**RF: Could you please talk about your work with Betsey Stevenson on the recent decline in self-reported happiness among women? What may explain that drop and what does this tell us about subjective measures of well-being?**

**Wolfers:** We organize the alternative hypotheses into three categories of explanations. The first is that women's measured happiness went down following the women's movement — and this shows that the women's movement was somehow a bad thing. The second is that our finding tells us something about measurement problems with happiness research. If most of us believe that the women's movement was good for women, but the happiness data say that it didn't make women happier, then there is a problem using subjective well-being to measure large-scale social change. There are lots of versions of this story. One is that the way women have answered the question over time has changed. Another may be that when you ask people how happy they are, they think about it in relative terms. Perhaps back in the 1970s, women were reporting how happy they were compared to the lonely housewife next door, and today they are reporting how happy they are compared to the man who has the corner office that they should have. Another version would be that when you report how happy you are, your report is heavily influenced by those domains of your life where you feel that you are doing badly. This is Betsey's preferred explanation. The number of things that women are involved in has greatly expanded over time, which means that there are more chances of failing. The third category suggests that there is a puzzle for social scientists. We simply don't know why women's reported happiness has fallen following the women's movement. When you ask most economists how things have changed for women over the last 40 years, most will describe it as a triumph for women. Wages have increased, social and legal protections have improved, technological change has arguably been gender biased in favor of women. The choice set of women has expanded, and according to neoclassical economics this is an unambiguously good thing. But it could be that our finding tells us that there's some other even more important

factor in the background. For instance, declining social cohesion or rising risk could have had a disproportionate effect on women relative to men.

Betsey and I are working on another paper that looks at another great social movement of the second half of the 20th century: the civil rights movement. The women's movement coincided with a decline in self-reported happiness. But for African-Americans, self-reported happiness increased greatly. There was an unconscionably huge gap between the happiness of blacks and the happiness of whites in the 1970s. Today that gap is large, but has declined very substantially. This is interesting, because most of the major civil rights legislation had already been passed by the 1970s, the period where the data begin. So it suggests that changes in attitudes — a decline in racism, for instance — have had a very positive effect on the lives of black Americans.

**RF: Should policymakers use happiness as a metric when deciding policy or should they use other measures that we tend to think of as more concrete and which we have traditionally considered to be the proper things to focus on, such as economic growth?**

**Wolfers:** I think the first piece of advice is that policymakers should not abuse happiness research. There was a view, for instance, that economic growth was unrelated to happiness — or actually might impede happiness. That just turns out to be false. So one useful role of social scientists here is to knock over canards. That said, I am still optimistic that there is something useful that can come from happiness research. (Also, I should note that I prefer the term "subjective well-being" to "happiness" because I think it gives a broader measure of how people perceive their circumstances.) The female well-being paper suggests that the trend moved in a puzzling direction during one period of time. But other results are more conventional. If you look across countries, it is absolutely astonishing how closely subjective well-being tracks objective measures. And if you look across countries, the correlation between the level of GDP per capita and the average level of life satisfaction is about .8, which is one of the highest correlations you will see in the social sciences.

In his presidential address this year to the American Economic Association, Angus Deaton made a somewhat obvious but important point. What we normally think of as objective measures of well-being are in some ways subjective. If we want to compare per capita GDP in the United States to that in Burundi, it's easy to measure the number of dollars, but then we have to compare the different price levels. And then do we use the consumption basket of a typical person in the United States or the consumption basket of a typical person in Burundi? And what is the social meaning of owning what is considered a pretty standard good in the United States compared to what is considered a luxury good in Burundi? So there is a level of technical difficulty in getting these things right.

A related point is that the objections we have to subjective measures of well-being are often quite similar to objections we could raise about "objective" measures. How do we measure subjective well-being? We go out and ask people how they feel. How do we measure the unemployment rate? We go out and ask people. You might object that happiness is a social construct. But if you ask someone if they had gone out and looked for work in the last four weeks, there's a lot of ambiguity too. Similarly, corporate profits sound like a pretty objective measure — until you talk to an accountant. So the value of subjective well-being is that it measures something we really care about. Those measures may be flawed and you can point out how they might be improved, but we should inquire whether people are satisfied with their lives.

The first generation of people doing subjective well-being analysis was very motivated by it, and sometimes their work has the feeling of religious revival. But the second generation of people involved in this area of research has been able to take a step back and ask some of the difficult methodological questions we discussed. But why should it necessarily interest economists? One answer is market related: Some people are going to do it. Why not economists? Our friends in psychology, sociology, and political science are doing it. And it's turned out to have enormous political resonance; for instance, consider the Sarkozy Commission. So this will be part of the policy discourse and, as economists, we have to decide whether we are going to be part of that policy discussion. I think we bring two things to the table. We bring very precise and useful models of human behavior that can help us interpret well-being data. And we bring some statistical savvy that, frankly, has been missing.

**RF: Your previous answer touches on this, but it may be useful to ask it explicitly: What do you think of the Easterlin Paradox — the idea, broadly speaking, that increases in income are not particularly well correlated with happiness?**

**Wolfers:** In some sense, we all seem to want the Easterlin Paradox to be true. We want to think that people are made happier by seemingly loftier ideals than becoming wealthier. As I noted, it turns out that it's just not true. Income has a huge effect on people's happiness.

It's also been asserted that there is some level of income that satisfies most people's desires — and that there is little point in striving to get above that number because it won't make you happier. That number is often given as $15,000 annually. That's a very widely held view, but as far as we can tell there has never been a formal statistical test of that view. So Betsey Stevenson and I went through every data set we could find to test it, and there is no evidence that an increase in income — at any point — stops making people happier. That's true for the very rich as well as the very poor. A 10 percent increase in income yields the same bump in

happiness, whether it's from $400,000, $40,000, or $4,000.

**RF: You noted in a recent blog post that despite being the "queen of the social sciences," books by economists are not frequently cited in scholarly journals across the board. It is true that the economics profession rewards publication of a book less than do many other disciplines — for example, a few good journal articles are more likely to help an economist get tenure than a book — but, still, economists do publish books, both with academic and large commercial houses. Why do you think the citation count for those works is relatively low?**

**Wolfers:** I still believe that economics is the queen of the social sciences. But the metric that leads me to say that is its influence on the world, which is what I think social science should be about. When it comes to almost any public policy problem, you call the economists. This is true in many areas once thought outside of the domain of economics, such as family policy and understanding politics. Economists have been very successful moving into those fields and have provided many important insights.

There are very few economics books that are widely cited across all of scholarship. The likely explanation for this is the body that one calls "all of scholarship" is dominated by the humanities, and people in the humanities don't cite economics very often. But the humanities don't have much influence, either. There may well be a poet laureate of the United States, but there is not a Council of Poetic Advisers. So we are unpopular with those who don't have much influence. I don't see much problem or tension with that.

The broader issue — the reason why I believe economics is the queen of the social sciences — is this movement of economics beyond GDP. It is hard not to think of Gary Becker as the founder of that, and this has been a very good thing. In sociology, I think our biggest influences have been on research about family or crime, as economists have done a lot of empirical work on those topics. With political science, on topics from election forecasting to political economy, we tend to see quite good empirical work from economists. That's not to say that we should ignore other research methods. In fact, I had a sociologist on my dissertation committee, Sandy Jencks. I used to joke with Sandy — and he promised not to be offended — that sociologists have great questions and economists have great answers.

What is interesting to think about are the terms of trade between economics and all these other disciplines. We are clearly a net exporter to political science and sociology. But at this point the trade with psychology is almost all one way. We are a near-complete importer. I wonder why we haven't been bigger exporters to psychology. I think it has to do with the research method. Like political scientists and sociologists, economists are almost all about the analysis of observational data. And then there are second-order differences. Formal political scientists write down a model before they observe data; informal ones don't. Ethnographers observe four people; survey researchers observe 4,000. But it's all observational. But when I watch and speak with my friends in psychology, very little of their work is about analyzing observational data. It's about experiments, real experiments, with very interesting interventions. So they have a different method of trying to isolate causation. I am certain that we have an enormous amount to learn from them. But I am curious why we have not been able to convince them of the importance of careful analysis of observational data.

**RF: Becker and others have long argued that discrimination is costly to firms and that in order to engage in it the leaders or shareholders of those firms must have a "taste" for it. What does your research on the gender composition of CEOs tell us about that claim?**

**Wolfers:** The standard neoclassical approach doesn't fully allow for what I think most people really believe discrimination to be: a mistake. With mistake-based discrimination, imagine that you go to evaluate the future profitability of a firm. One of the things that you are going to look at is the quality of the CEO. You probably have a mental picture of a tall white guy in a pinstripe suit, and if the CEO doesn't fit that image you may have a less positive opinion of that firm. If that is true, firms headed by women should systematically outperform the market's expectations. The first paper was somewhat inconclusive; it wasn't clear whether the firm overall outperformed expectations. Alok Kumar and I are working on a follow-up paper that uses quarterly earnings announcements, which gives us a lot of observations. It turns out that female-headed firms beat analysts' expectations each quarter much more frequently than similar male-headed firms. If you look at which analysts are getting things wrong, it's disproportionately male analysts who have inaccurately low expectations of female-headed firms. That's not true of female analysts; female-headed firms actually do not beat the expectations of female analysts. This, then, suggests what we see are mistakes, not tastes. These analysts do not want to get a reputation for poor forecasts; they are not trying to lose money. In fact, one of the ways you can test whether what we observe are mistakes is to ask people if they would be willing to change their behavior when presented with the data. And whenever I teach this paper to my MBA students, many of whom are former analysts, they say that they are going to change their behavior when they get back to the real world. So this is just a bias that is in the back of their minds, and when they understand the implications of that bias they want to rid themselves of it.

**RF: Could you explain what a prediction market is — and in which areas of business and policy you think that prediction markets have the most promise?**

**Wolfers:** It's simply a betting market, really. You choose an event and bet on whether it will occur. The simplest

example is: Who is going to win the next presidential election? The value of this approach is that it is a way of eliciting expectations.

A lot of people ask: Are prediction markets accurate? I think a more useful question is: Are prediction markets better than the alternative? So, for instance, in presidential elections are prediction markets more accurate than the Gallup Poll? The answer is yes. In nearly every head-to-head comparison between prediction markets and some alternative, prediction markets have turned out to be at least as accurate.

Still, a lot of social scientists, policymakers, and businesspeople seem reluctant to use prediction markets. I think there are several barriers to their adoption. One is legal. Betting on events is generally not legal in the United States. So most of the interesting prediction markets are operated offshore. Another is that the United States does not have a gambling culture. In contrast, in Australia, my home country, we will bet on virtually anything. Betting on whether something will happen is simply a natural part of our language. Third, in order to listen to the results of a prediction market you have to be willing to accept that the market is smarter than you are. That requires a lot of humility — and a fair bit of knowledge of how markets work. When someone asks me who I think will win the next election and by how much, I look up the prediction market and I state that number exactly, which means I have to give myself no credit for knowing anything about politics beyond that info embodied in the prediction market price. Most people are not very good at this. They tend to be confident in their individual ability to predict outcomes, even in areas where they may not know much.

In order for prediction markets to be useful in business, for example, the CEO has to be willing to listen to them, and CEOs tend to be men of action who are quite reluctant to admit the limits of their knowledge. Also, think about what middle management is in most firms. They tend to be information monopolists. Their analysts do the research and report it to them and then they decide whether to present it to the CEO. With a prediction market, everyone on the shop floor could give an opinion and that information would go directly to the CEO. That would undermine middle management's role as an information monopolist, so they are reluctant to adopt prediction markets.

As for where prediction markets are useful, I think there is a wide range of opportunities in business. Any business would like to forecast next year's sales, and it appears that prediction markets are very useful at doing that. No company or policy organization has fundamentally changed its management or operation structure by using prediction markets. But there are some firms like Google that have people researching prediction markets and use them for some purposes. In policy, at the Federal Reserve I assume that Ben Bernanke has a Bloomberg terminal in his office and looks at what's happening with interest rate futures. What are interest rate futures? They are a prediction market on the likely path of interest rates. Similarly, when economists at the Fed want to put together a macro model, they put in some assumptions about oil prices. In order to do this, they look at how oil futures are trading. What are oil futures? They are prediction markets on the future path of oil prices. The same is true with foreign exchange markets and so on. So prediction markets are being used, but we don't necessarily call them prediction markets in these cases.

## Justin Wolfers

**➤ Present Position**

Associate Professor of Business and Public Policy, The Wharton School, University of Pennsylvania

**➤ Previous Faculty Appointment**

Stanford University Graduate School of Business (2001-2004)

**➤ Education**

B.Ec. (1994), University of Sydney; A.M. (2000) and Ph.D. (2001), Harvard University

**➤ Selected Publications**

Author or co-author of numerous papers in such journals as the *American Economic Review*, *Quarterly Journal of Economics*, *Journal of Political Economy*, *Journal of Monetary Economics*, *Quarterly Journal of Political Science*, *Journal of Legal Studies,* and *Science*

**RF: If prediction markets are such a powerful tool, then why weren't we able to use them to more effectively see that, say, the run-up in house prices was unsustainable or that (related) large problems in the financial markets were likely?**

**Wolfers:** We should acknowledge that all mechanisms of aggregating information are imperfect. So you do see bubbles, manipulation, noise trading, volatility, and so on. Despite that, as an empirical statement, in every head-to-head comparison, prediction markets tend to do better than the alternative. As an illustration, I co-authored a paper a few years ago that looked at a short-lived market called the "economic derivatives market," where you could bet on nonfarm payrolls, retail sales, unemployment claims, business confidence. The way we normally forecast these things is we call 30 forecasters and we determine the consensus. It turned out that prediction markets did a better job than the consensus.

Would this be true in housing? I don't know. We could run the experiment and find out. Still, we know that markets were wildly optimistic in predicting the future path of house prices. But think about the alternative: So were most of the analysts. If you had surveyed analysts rather than relying on markets, you would have run into the same problems. So it's not clear to me that markets failed us in the case of housing considering the alternative. They didn't do a great job, but they didn't do worse than the alternative of asking analysts. The evidence so far suggests that markets are the least imperfect forecaster. There may be settings where that is not true, but I have not run across them. **RF**

# Intranational Trade

BY RENEE COURTOIS

## How a century of legal precedent has shaped the government's power to regulate commerce between states

The Constitution divides lawmaking authority in the United States between states and the federal government. State governments can pass laws governing anything except matters the Constitution says they cannot, whereas the federal government can regulate only the things the document explicitly says it can.

In regards to commerce, the authors of the Articles of Confederation — the first governing document of the United States — thought states should have autonomy to regulate within their own borders according to their industry and priorities. But uncertain economic times after the American Revolution made clear the need for a federal authority too. Severing ties with Britain also lost the colonies one of their primary trading partners, as well as their chief regulator of trade across state lines.

The states soon suffered from a simple collective action problem. They erected trade barriers to protect their own citizens, which no one state had incentive to unilaterally tear down while others left theirs up, even though everyone would have been better off with freer commerce between them. States' protectionist policies grew so onerous and retaliatory that some even feared they would culminate in state-to-state combat.

*The Schechter brothers with attorney Joseph Heller (center) celebrate the 1935 Supreme Court ruling in* A.L.A. Schechter Poultry Corp. v. United States, *which overturned fines against them and ushered in a short-lived era of judicial limits on congressional power.*

PHOTOGRAPHY: THE GRANGER COLLECTION, NEW YORK

For this reason, the Framers of the Constitution included the second enumerated power granted to Congress in Section 1, Article 8 of the U.S. Constitution, which gives Congress the right to "regulate Commerce with foreign Nations, and among the several States, and with the Indian Tribes." The middle provision — Congress's right to regulate interstate commerce — became a hotly debated clause in the 20th century. The debate has been renewed today in light of recent federal legislation concerning health care reform, which requires citizens within states to undertake a specific form of commerce (i.e., purchase insurance).

It's always an open question as to whether the Supreme Court will take up legal challenges to new legislation based on commerce clause grounds. Understanding the legal history of the clause can help the public put the current debate in context.

### The Birth of Federal Regulation

The Commerce Clause was rarely invoked for the first 100 years of the U.S.'s history. During that time it was mostly used under the purpose the Framers envisioned: to mitigate state trade barriers that would hinder interstate commerce, such as taxes levied on goods produced in other states.

But the industrial revolution made states more economically interdependent than ever. The stakes on interstate commerce were now higher and brought new questions about what constituted interstate commerce.

Not surprisingly, the rise of the railroads — then the literal vehicles of interstate commerce — became an early test of the boundaries of state versus federal regulation. In the late 1800s, the transport of bulk items like grain, lumber, and coal was the railroads' main business. But it wasn't that profitable. Competition from water carriers forced railroads to keep rates low, and railroads increasingly used profits from local delivery services to recoup fixed costs on less-profitable bulk transport services.

The growth of local delivery business also made it affordable for railroads to draw freight business from competitors by offering favored pricing to certain shippers and

localities, a practice called price discrimination. This bred public frustration especially from farmers in far-flung geographic areas who were on the losing end of the deal.

States tried to limit price discrimination through regulation, but their rules could extend only as far as their borders. In 1886 the Supreme Court ruled that the state of Illinois had actually overstepped its bounds in regulating railroads, and Congress intervened in 1887 by creating the first-ever federal regulatory agency, the Interstate Commerce Commission. The ICC allowed railroads to continue charging a markup on local delivery services to recoup the fixed costs of bulk transport, but they could no longer offer discounted pricing and rebates to certain customers over others. The primary goal was to maximize access to services.

Though the ICC was a direct answer to widespread public frustration with railroads, it is telling that railroads supported the legislation. They sought an end to the price wars, secret rebates, and price concessions offered to customers to garner business, but also hoped the ICC would strengthen the railroad cartel. Indeed, the ICC helped the railroad industry evolve from a private cartel to a publicly managed one, noted the late economist Marcus Alexis of Northwestern University in 1982.

The ICC is now regarded as a classic example of "regulatory capture," in which regulators end up sympathizing with the regulated and enact rules in their favor. For example, in the Transportation Act of 1920, Congress allowed the ICC to regulate minimum, not just maximum, shipping rates, as well as control entry into and exit from the industry, among other issues. Contrary to the original intention of Congress to widen competition, the ICC eventually came to have the opposite effect.

### The New Deal Court

The ICC would not be the last example of public agitation prompting federal regulatory action. Starting in 1933, a sweeping batch of New Deal economic sanctions was passed under President Franklin Roosevelt to deal with the Great Depression. Roosevelt, based in part on counsel from economists, thought the Depression was a product of unbridled and "unfair" competition that kept wages low and suppressed demand. The answer, in his view, was a heavier government hand in managing the economy.

The government created the National Recovery Administration (NRA) to enforce price and wage controls, in part by establishing "fair competition codes." The codes set maximum hours for the workweek, prohibited child labor, and set minimum wages. Virtually no industry was exempted.

The strict controls on competition proved difficult to enforce. Producers began finding ways around the codes, such as a group of immigrant brothers in Brooklyn who ran a business slaughtering chickens and selling them to retailers within the state of New York. The Schechter brothers were charged with selling unfit and diseased chickens at discounted prices, among other violations. They were convicted by the government and fined before they appealed the decision. Since their chickens were being sold solely within New York State lines, the brothers said, the federal government had no authority to regulate them through the NRA.

The Commerce Clause of the U.S. Constitution grants Congress the power to, "regulate Commerce with foreign Nations, and among the several States, and with the Indian Tribes." But what constitutes interstate commerce?

The Supreme Court agreed in 1935's *A.L.A. Schechter Poultry Corp. v. United States*. The Court interpreted the Constitution to mean that Congress could regulate commerce between states; Congress could not, however, delegate those authorities to the president. The Roosevelt administration held that transactions which wouldn't ordinarily have a substantial effect on interstate commerce may do so in an "emergency," when the national economy is more interdependent. But even though the national economic emergency may justify extraordinary measures, wrote Chief Justice Hughes in the Court's ruling against the government, it did not justify an expansion of the government's constitutional powers.

The political implications became as evident as the legal ones. After the *Schechter* ruling, Justice Louis Brandeis made a point of pulling aside one of Roosevelt's aides to warn that the decision was "the end of this business of centralization." His words were prophetic, as 1935 and 1936 saw a series of "Black Mondays" in which the Supreme Court repeatedly struck down attempts by Congress to enact New Deal programs.

But the president would not take this lying down. In early 1937 Roosevelt pitched a proposal to add another justice to the Supreme Court for each existing justice over the age of 70, to ease the case burdens of the older judges, he said. The real goal was to pack the Court with justices sympathetic to New Deal policies.

Soon thereafter, a justice switched sides on another New Deal constitutionality case and the Court ruled in favor of the government. The justice's change in position became known as the "switch in time that saved nine." The justices held that Roosevelt's threat did not affect the outcome of the case, but many legal scholars are not convinced.

In the years that followed, the seemingly chastened Court overturned many of its previous rulings limiting federal government power. An era was born in which the Court deferred to Congress on all matters of economic regulation. The new trend was amplified in 1942 in what was arguably the single greatest expansion of federal regulatory power in the history of Commerce Clause case law.

At the time, the nation's wheat growers were restricted to a limited crop size under a Depression-era policy created to moderate (some say raise) national wheat prices. Roscoe Filburn, a farmer in Ohio, exceeded the limit to feed his

livestock and family. He was fined and ordered to destroy the extra wheat, but he appealed. The wheat was intended for private use and would never come to market, he said, so the government's wheat limits should not apply.

The Supreme Court agreed with the government in 1942's *Wickard v. Filburn*. The extra wheat Filburn grew constituted wheat he would not buy commercially, the Court said, and therefore affected the interstate wheat market. Furthermore, though Filburn's actions alone were not likely to have a noticeable effect on interstate commerce, if many individuals followed suit the cumulative effect surely would be substantial.

For the next 50 years, legislation passed by Congress assumed a continually expanding interpretation of its authority to regulate, and every related case taken by the Supreme Court was decided in the government's favor. Not that there was much public objection to this trend.

Congress's broader interpretation of Commerce Clause authority led to some widely lauded legislative achievements such as the Civil Rights Act of 1964 and other enhancements of civil liberties. The courts, by comparison, looked rudderless in commercial cases. Lower courts lacked a clear framework by which to interpret the many cases that rested vaguely on the Commerce Clause, and different federal appeals courts reached conflicting conclusions. Congress was effectively the arbiter of the lines between federal and state power during this period.

## Defining the Limits

A pivotal 1995 case came as a surprise. After a 12th grade boy carried a loaded gun into his school, he was convicted under the federal Gun-Free School Zone Act of 1990 (GFSZA) that made it illegal for an individual to possess a concealed firearm within 1,000 feet of a known school zone.

The government had justified the GFSZA under its authority to regulate interstate commerce. Yet the link between gun violence and commerce, let alone the interstate variety, was not obvious. Previous Commerce Clause rulings had established that an activity would need to affect interstate commerce on one of three levels for Congress to regulate it. First, the activity could relate to the channels of interstate commerce, such as railroads, waterways, or streets. Second, it could affect the "instrumentalities" of commerce, or the people and things that are conduits of economic activity. That left only the third and hardest to define class of activity: those with a "substantial effect" on interstate commerce.

This is where the government made its case. Guns likely lead to violence, it contended, which would disrupt the educational process and impair the future productivity of affected children. If enough people did it, the health of the economy as a whole would be impaired.

But under the federal government's logic, the Court argued, Congress would have the power to regulate any activity that might conceivably lead to a violent crime. It was hard to imagine anything that couldn't meet this threshold. It was not enough to "pile inference upon inference" to connect an activity to interstate commerce. In actuality, the GFSZA neither dealt with a commercial activity nor required that the gun possession it prohibited be in any way connected to interstate commerce. The Court ruled in 1995's *United States v. Lopez* against the government and the GFSZA was invalidated.

A case in 2000 echoed the *Lopez* ruling. A female student at Virginia Tech was sexually assaulted and sought federal recourse under a portion of the 1994's Violence Against Women Act (VAWA) that allowed victims of gender-motivated crimes to file a federal case against attackers. The VAWA exceeded congressional power, the Supreme Court ruled in *United States v. Morrison*, which named one of the alleged attackers as the defendant. The violent act of one party against another was not economic in nature — despite the potential economic harm that might result for the victim — and therefore had no conceivable impact on interstate commerce.

*Morrison* also strengthened the *Lopez* result. In contrast to the *Lopez* case, the VAWA legislation provided ample evidence of the economic effects of gender-motivated violence. But the Court stood that Congress could not regulate noneconomic crime of one person against another based solely on the possibility that the cumulative effect of many similar acts of that crime could affect interstate commerce. This differed from the *Wickard* case, in which cumulative effects of economic activity were deemed appropriate federal jurisdiction. To allow Congress to regulate any activity that in any remote way affects commerce would be to confer onto Congress general police power over the nation, the Court said. That could somewhat eradicate the federated structure secured by the Constitution.

Although the Court seemed to be ending its long-standing deference to Congress, remnants of that deference remained. The Court ruled in 2005's *Gonzales v. Raich* against an ill California resident who had grown marijuana for medicinal use, which was valid under California law but prohibited nationally. There was indeed an established, albeit illegal, market for marijuana, the Court said. Like the Depression-era wheat farming in *Wickard*, a booming black market for marijuana could raise prices and draw homegrown product into the market, counteracting the government's efforts to limit commercial transactions in the drug. Justice Scalia wrote in a clarifying opinion that Congress could regulate purely intrastate activities, even if they don't "substantially" affect interstate commerce, if they could otherwise undercut its ability to regulate interstate commerce.

## What's at Stake

Justice Sandra Day O'Connor's dissent in *Raich* reiterated that the Supreme Court's role is to enforce the outer limits of Congress's Commerce Clause authority to protect state sovereignty from a gradual encroachment of federal power.

It is difficult to imagine in advance how any precedent might be applied in the future toward this end without knowing the specifics of the cases that will arise.

Take, for example, health care legislation passed in March 2010, the most recent arena in which Commerce Clause breaches have been alleged. The law requires all U.S. citizens to purchase health insurance or be subject to a fine. Critics point out that health insurance is strictly intrastate; it is regulated by states and historically has never been purchased across state borders.

The other side recalls the *Wickard* and *Raich* rulings, in which the Supreme Court allowed Congress to regulate activities that aren't strictly interstate commerce but have the potential to "substantially" affect interstate commerce, or that impede Congress's regulation of a market the Commerce Clause might say is valid to regulate, such as that for health care.

But the health care question contains something new. The Commerce Clause says Congress has the right to regulate certain activities — but can it regulate the failure to engage in an activity like the purchase of health insurance? What if said inactivity "substantially" affects a regulated class of interstate commerce? It's not immediately clear how the legal precedents established by the Supreme Court apply in these examples.

Answering such questions may not be easy. Many of the same debates held by the Framers over the proper balance of authority are still very much alive today. **RF**

## Readings


Alexis, Marcus. "The Applied Theory of Regulation: Political Economy at the Interstate Commerce Commission." *Public Choice*, January 1982, vol. 39, no. 1, pp. 5-27.

Althouse, Ann. "Inside the Federalism Cases: Concern about the Federal Courts." *Annals of the American Academy of Political and Social Science*, March 2001, vol. 574, no. 1, pp. 132-144.

Bork, Robert, and Daniel Troy. "Locating the Boundaries: The Scope of Congress's Power to Regulate Commerce." *Harvard Journal of Law & Public Policy*, Summer 2002, vol. 25, no. 3, pp. 849-894.

Fine, Sydney. *Laissez Faire and the General Welfare State: A Study of Conflict in American Thought, 1865-1901*. Ann Arbor, Mich.: University of Michigan Press, 1956.


Charitable Giving *continued from page 23*

endowed society's most famous institutions. Those gifts have also enabled prototypes, such as the nation's 911 emergency response system and the Pell Grant program that sends poor students to college. Nonprofit grants from Carnegie and other foundations even gave the private, nonprofit National Bureau of Economic Research an initial leg up in the 1920s. More recently, Warren Buffett announced his gift of $31 billion to the Bill and Melinda Gates Foundation. That's more than twice — in 2006 dollars — the combined amount Carnegie and Rockefeller gave in their day.

While individuals make up three-fourths of charitable giving, less than 2 percent of households actually give according to a traditional religious "tithe" — 10 percent of income. The norm is 1 percent to 2 percent of average income.

Contributions to groups that supply basic needs, such as homeless shelters or food banks, grew by 3.7 percent after a decline the previous year. Religious giving barely budged, with a 0.3 percent decline. "Combination organizations," such as United Way and the United Jewish Appeal, received more in contributions in 2008; giving to that category fell by 4.2 percent in 2009.

People give money when they feel secure based on the value of their assets, and the connection between changes in the stock market and giving has strengthened. Estimates associate a 10 point increase in the Dow Jones Industrial average with $16 million more in charitable giving, and a $1 billion increase in personal income associated with $15 million more. "We particularly see the DJIA more important in the post-World War era, as more households own financial assets," Osili says. "We are watching personal income closely. Based on historical patterns of recovery, personal income will have a robust impact on giving."

The outlook for giving remains uncertain. Wider participation in financial markets affects philanthropy today more than in previous downturns, and policy changes could also inhibit gifts. But philanthropic professionals are pinning hopes for recovery on other dissimilarities: higher per-capita income, a greater percentage of college graduates, and more households supporting secular causes. **RF**

## Readings


Fleishman, Joel L., *The Foundation: A Great American Secret*. New York: Public Affairs, 2007.

Garrett, Thomas A., and Russell M. Rhine. "Government Growth and Private Contributions to Charity." Federal Reserve Bank of St. Louis Working Paper 2007-012, July 2009.

Giving USA Foundation. *Giving USA 2010*. Indianapolis: The Center on Philanthropy at Indiana University.

Gruber, Jonathan, and Daniel M. Hungerman. "Faith-based Charity and Crowd-out during the Great Depression." *Journal of Public Economics*, June 2007, vol. 91, nos. 5-6, pp. 1043-1069.

# The Great Trade Collapse: Past, Present, and Future in Fifth District Export Activity

BY SONYA RAVINDRANATH WADDELL

For much of the past decade, and particularly as the recession began to take hold in 2007, international demand for U.S. consumer goods was hailed as a way to replace declining domestic demand. In fact, until October 2008, international trade was considered a bright spot in the U.S. economy, with exports of goods and services peaking in that month at 13.2 percent of U.S. GDP. In October 2008, however, U.S. exports began to plummet, and over the fourth quarter alone exports fell nearly 11 percent. Although output was also falling, by the second quarter of 2009 export activity had dropped to 10.6 percent of GDP.

Trade activity in the Fifth Federal Reserve District also contracted notably during that period. In fact, while goods exports in the nation fell 26.9 percent from the third quarter of 2008 through the second quarter of 2009, Fifth District exports fell 22.2 percent. This was the sharpest export contraction on record for the Fifth District. And, although trade activity has recovered considerably since the middle of 2009, exports are still below their prerecession levels. Analyzing export changes in the Fifth District over the past two years requires an understanding of what happened to trade on a national and global level. Any speculation on the magnitude of export activity in the Fifth District going forward, and its role in the Fifth District economy, will also require a careful understanding of the industrial and geographic makeup of Fifth District exports.

## The Great Trade Collapse

U.S. export activity experienced an unprecedented contraction in the winter of 2008-2009. From the third quarter of 2008 to the second quarter of 2009, total real export values fell at a 10 percent average quarterly rate. But the decline in U.S. trade activity was really a decline in global trade. World trade experienced its sharpest drop in recorded history and deepest contraction since World War II. All 104 nations for which the World Trade Organization reports data experienced contracting imports and exports during the second half of 2008 and into 2009.

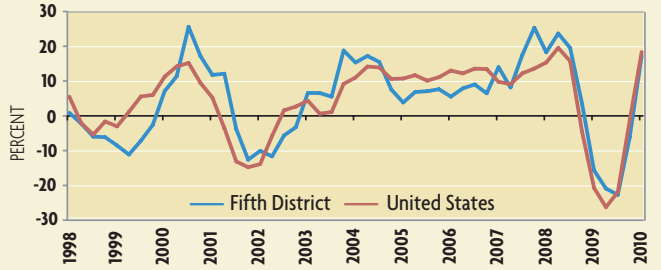
It is no coincidence that the trade contraction coincided with a slump in global output. As a country's economy slows, demand for goods — including imports — will decline. There is a close connection between trade and GDP: Falling demand for imports in a country typically is connected to a decline in export activity with the country's major trading partners which will, all else equal, contribute to output falling further. In fact, according to a 2010 paper by economists Rudolfs Bems, Robert C. Johnson, and Kei-Mu Yi, of the 14 countries that collectively account for three-quarters of world GDP, only India and China experienced growth in the last quarter of 2008 and the first quarter of 2009.

It would be easy to conclude, then, that it was simply falling GDP, and reduced demand for global goods, that led to this unprecedented fall in trade activity. However, world trade activity contracted considerably more than world GDP — anywhere between four and 25 times more, depending on the source (and time period) chosen. In the United States, for example, while real export activity fell almost 28 percent from the third quarter of 2008 through the second quarter of 2009, over the same period real GDP declined only 3.2 percent (at a 1.1 percent average quarterly rate).

There are a number of theories as to why the trade contraction so considerably outpaced the drop in GDP. First, the composition of GDP and the composition of traded goods can be quite different. There is strong evidence that the drop in demand was dominated by a narrow range of "postponable" goods, such as consumer durables and investment goods. These goods make up a small share of world GDP but a large share of world trade.

Bems, Johnson, and Yi cited data from the Bureau of Economic Analysis that showed domestic demand for durable goods decreasing by 18 percent, while demand for nondurables decreased by only 1 percent. A contraction in demand for manufactured goods would affect trade in the United States and the Fifth District more severely than it would tend to affect the overall economy of either. In the third quarter of 2008, the manufacturing sector accounted for less than 10 percent of employment in the United States, but almost 80 percent of total goods exports. In the Fifth District, the manufacturing sector accounted for almost

**Total Exports**
(Percent Change, Year-over-Year)




SOURCE: BEA/Haver, WISER/Haver

90 percent of exports in the same quarter, but less than 9 percent of payroll employment.

Another explanation for the global trade decline — or at least for its synchronized nature — lies in the increasing globalization of production processes, or the expansion of "vertical linkages" in production. An increasingly large share of trade involves goods at different stages of the production process, and creating a final good involves many different countries. These vertical linkages can propagate shocks because a reduction in demand for a final good is felt in every country with a role in the good's production. Negative demand shocks can also asymmetrically affect industries whose production processes involve more vertical linkages.

Finally, an explanation for the steep and sudden trade decline lies in the nature of this particular recession. In September 2008, a number of exceptional things happened: The U.S. government put mortgage giants Fannie Mae and Freddie Mac into conservatorship, the investment firm Lehman Brothers filed for bankruptcy, and U.S. policymakers took action to prevent the failure of the insurance company AIG. These events not only created uncertainty about the future, forcing many households and businesses to rein in spending, but they also led to a global credit market freeze. The deteriorating credit conditions could have affected trade finance, thus contributing to the sharp contraction in activity. However, research suggests that the decline in demand for goods — which stemmed in part from uncertainty about the economy — and the vertical integration of supply chains had a stronger impact on trade than did a decline in credit availability.

## The Fifth District in the Trade Collapse

To what extent was the decline in Fifth District export activity the result of the factors discussed above? To answer this question, it is important to explore changes in the economic environment faced by the District's major trading partners and explore the types of industries that faced the sharpest contraction in exports. It will also be instructive to better understand the makeup of District exports and how they differ from exports in the United States as a whole. Because there is not much state-level data on services exports, "exports" in this section refers to exports of goods. Goods exports make up about 70 percent of U.S. export activity, and the U.S. decline in goods exports was more severe (26.9 percent) than the decline in services exports (10.3 percent). Furthermore, our industry analysis includes only exports of manufactured goods, which make up about 80 percent of U.S. goods exports and 90 percent of Fifth District goods exports.

Clearly, a drop in international demand was a factor in the Fifth District export contraction. Of the top 20 importers of District goods, which together consume almost 80 percent of District exports, at least 15 saw notable declines in GDP from the third quarter of 2008 through the second quarter of 2009. Overall, the demand conditions faced by District exporters do not differ much from those faced by exporters in the United States as a whole, since the Fifth District's major export destinations are not significantly different from the major destinations of national exports.

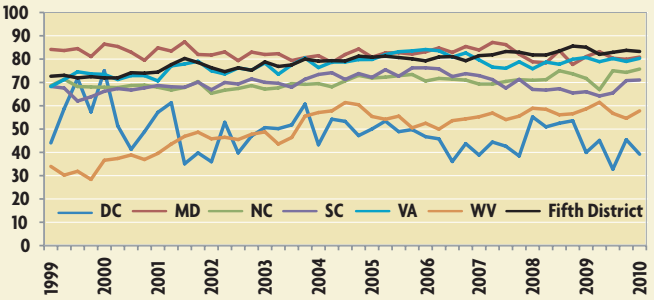
Of the top 20 export destinations of U.S. and Fifth District goods, only six destinations are not shared. (The Fifth District's major importers include the United Arab Emirates, Saudi Arabia, and Egypt, while those of the United States include Switzerland, Malaysia, and Colombia.)

The industrial makeup of Fifth District exports is also very similar to that of the United States. To measure the similarity between the sectoral concentration of Fifth District states' manufacturing exports and that of the United States as a whole, we calculate an export similarity index. We use the measure proposed by Finger and Kreinin (1979) and used in a similar manner by Coughlin and Pollard (2001). The index ranges from zero to 100, with zero indicating complete dissimilarity and 100 indicating that the state's sectoral distribution of exports is identical to the national distribution.

The Fifth District export similarity index has hovered around 80 for most of the past decade, indicating a sectoral distribution that is quite similar to the U.S. distribution. The two jurisdictions with consistently the lowest index — West Virginia and the District of Columbia — are also the two regions of our District that contribute the least to total manufactured exports (7.1 percent and 1.3 percent, respectively, in the first quarter of 2010).

Another interesting note about the Fifth District similarity index is that it has trended up in the last 10 years, indicating that the industry makeup of Fifth District exports is slowly converging to that of the nation. In the fourth quarter of 2008 and the first

**Export Similarity Index**




SOURCE: Calculated using data from WISER/Haver

QUICK FACT

**The Export Similarity Index is constructed by calculating a particular industry's share of a state's total exports and comparing that to the same industry's share of national exports. For each industry, we compare the state share to the national share, take the minimum, sum the 20 values, and multiply by 100.**

quarter of 2009, when exports were falling most severely, the export similarity index reached a series high of more than 85. At least part of the explanation for this convergence lies in the declining auto sector; the transportation equipment's share of District exports fell notably in this period and began to match the national share.

Exports of transportation equipment did, in fact, make up the largest portion (34 percent) of the District export decline. In the second quarter of 2008, transportation equipment made up almost 24 percent of all Fifth District exports; that number had dropped to about 18 percent by the second quarter of 2009 and did not improve much in the ensuing quarters. This coincides with national problems in the motor vehicles sector that also helped to drive the collapse in total U.S. trade. Exports of transportation equipment in that year fell 38 percent in the United States compared to 34 percent in the Fifth District, but the industry's share of total exports remained around 19 percent in the United States.

Despite the transportation equipment industry's high share of total losses, five District industries saw export levels fall at a faster pace than the transportation equipment industry. Petroleum and coal products had the sharpest fall, followed by primary metals, beverages and tobacco, furniture, and apparel. In other words, firms across District industries suffered declining exports in this period; firms exporting transportation equipment did not dominate the trade collapse in our region. And, although all industries experienced accelerated export declines from the third quarter of 2008 through the second quarter of 2009, a few industries had been seeing falling exports for some time.

Exports from the apparel industry, for example, fell at an average quarterly rate of 2.4 percent from the beginning of the decade to the third quarter of 2008 (at which point the decline accelerated to an average 14 percent quarterly). The beverages and tobacco industry exports also declined at a 3.3 percent average quarterly rate before the trade collapse, and 17.4 percent starting in the third quarter of 2008.

Although no industry has yet recovered to the export levels seen before the collapse, only three industries have continued to see export declines. For two industries — printing and chemicals — the average quarterly decline has abated notably. Although declines in District exports of petroleum and coal products moderated, exports continued to fall at a 12.5 percent average quarterly rate since the second quarter of 2009.

**Top 10 Export Destinations**

| | U.S. | Fifth District |
|---|---|---|
| (1) | Canada (19.5%) | Canada (18.1%) |
| (2) | Mexico (12.5%) | China (8.1%) |
| (3) | China (7.1%) | Germany (5.9%) |
| (4) | Japan (4.9%) | Mexico (5.8%) |
| (5) | U.K. (4.2%) | U.K. (4.8%) |
| (6) | Germany (3.9%) | Japan (4.7%) |
| (7) | South Korea (3.2%) | Netherlands (3.4%) |
| (8) | Brazil (2.6%) | France (2.9%) |
| (9) | Netherlands (2.6%) | Brazil (2.9%) |
| (10) | Singapore (2.4%) | Belgium (2.8%) |
| Total | 62.9% | 59.4% |

SOURCE: Bureau of the Census/Haver, WISER/Haver

## Export Diversification

Globalized production processes almost certainly contributed to export declines in certain industries. However, it is outside of the scope of this article to examine the extent to which that was a factor in their decline. It seems likely that the role of various factors in the trade decline differed across industries; certainly the disproportionate decline in demand for durables played a role in the transportation equipment and furniture export sectors. We do, however, explore the extent to which the recent trade collapse might have altered the level of diversification of Fifth District exports. Were certain industries permanently affected by the trade collapse? To better understand the diversification of Fifth District exports and how that might have changed, we engage the Hirschman-Herfindahl (HH) index used by Gazel and Schwer (1998). We use the index to measure the relative concentration of tradeable sectors and individual export markets for the United States and for Fifth District states. See tables on page 39.

The HH index is the sum of squares of all market shares and therefore ranges from one, which indicates total concentration in one sector, to one divided by the number of sectors, which indicates complete diversification. Because we would like to be able to compare industry and export destination diversification within a state, we use the same number (20) of international markets as we had

QUICK FACT

The Origin of Movement (OM) data contain export sales (or free-alongside-ship costs if the good is not sold) from U.S. states and territories to 242 foreign destinations, classified by NAICS subsectors. The data are published by the Census Bureau and the World Institute for Strategic Economic Research (WISER). The OM data reflect the transportation origin of exports, not their origin of production, a limitation that has deterred many academics and practitioners from using the data set. However, work by Andrew Cassey in 2006, and Ron Cronovich and Ricardo Gazel in 1999, indicates that OM data are usable for Origin of Production data with the primary disclaimer that OM data can be inaccurate for agricultural and mining exports. In order to limit inaccuracy, we confine our analysis primarily to data on manufactured goods and, for time-series reliability, only to data collected after the institution of NAICS categorization in 1997.

NAICS codes for manufactured exports. For every state, the top 20 export destinations accounted for at least 75 percent of all exports and as much as 92 percent in the District of Columbia.

On the whole, once again, the Fifth District and the nation look rather similar. Turning first to the HH indexes for export destination, it is clear that although District exports began the decade more concentrated than national exports, they later became less concentrated. This does not mean that the Fifth District had more export destinations, since in creating this index we constrained ourselves to the top 20 importers of District and U.S. goods. The lower index in the District simply means that regional exports were more widely spread among those top 20 export destinations than total U.S. exports. There is some intuition behind this finding — many states in the United States are geographically and culturally closer to some of our nation's major trading partners such as Mexico, Canada, and parts of Asia than Fifth District jurisdictions. Within the District, exports from Washington, D.C., are the most concentrated, with more than 50 percent of D.C. exports going to the United Kingdom or the United Arab Emirates. On the other hand, Maryland and, increasingly, Virginia have had the lowest export destination HH indexes among the Fifth District states.

The HH export destination index has been generally trending down. This index reached a low of 0.074 in the fourth quarter of 2008 and has since returned to first quarter 2009 levels. It is not clear, though, if we are going to see a reversal in the downward trend of the index. It is likely that at least part of the drop in the index can be attributed to the collapse in exports to Canada in the fourth quarter of 2008. Fifth District exports to Canada fell by almost half in the fourth quarter of 2008 as Canada's share went from 17 percent of total District exports to 10 percent. By the fourth quarter of 2010, however, exports to Canada returned to about 18 percent of District exports.

Turning to the industry concentration of exports, we find that until 2008, Fifth District exports were often notably less concentrated than those in the nation. Again, D.C. has a high HH index, but we also find South Carolina and Maryland to have notably high levels of sector concentration. Almost 50 percent of South Carolina exports are in machinery and transportation equipment, and an additional 17 percent are exports in chemicals. Maryland also has more than 25 percent of its exports in transportation equipment, and an additional almost 25 percent in chemicals. Almost 15 percent of Maryland's exports are in computers and electronic products.

It is not immediately obvious that the trade collapse had a notable effect on the concentration by industry of District exports. The industrial concentration of regional exports trended up for most of the decade, and although the last few quarters have seen slightly lower index levels than the index peak in the second quarter of 2009, it is not clear that we are facing a regime shift.

The Fifth District is remarkably like the nation in export concentration by both industry and destination. It is not surprising, then, to see expansion and contraction in Fifth District export activity that closely tracks that of the United States as a whole.

### Hirschman-Herfindahl Export Concentration Indexes: **Export Destination**

| | U.S. | Fifth District |
|---|---|---|
| 2000:Q1 | 0.137 | 0.141 |
| 2001:Q1 | 0.125 | 0.123 |
| 2002:Q1 | 0.130 | 0.117 |
| 2003:Q1 | 0.132 | 0.121 |
| 2004:Q1 | 0.128 | 0.115 |
| 2005:Q1 | 0.132 | 0.126 |
| 2006:Q1 | 0.131 | 0.127 |
| 2007:Q1 | 0.121 | 0.111 |
| 2008:Q1 | 0.115 | 0.103 |
| 2009:Q1 | 0.111 | 0.091 |
| 2010:Q1 | 0.113 | 0.097 |

SOURCE: Calculated using data from Bureau of the Census/Haver, WISER/Haver

### Hirschman-Herfindahl Export Concentration Indexes: **Export Sector**

| | U.S. | Fifth District |
|---|---|---|
| 2000:Q1 | 0.135 | 0.097 |
| 2001:Q1 | 0.136 | 0.095 |
| 2002:Q1 | 0.139 | 0.106 |
| 2003:Q1 | 0.133 | 0.115 |
| 2004:Q1 | 0.136 | 0.118 |
| 2005:Q1 | 0.129 | 0.119 |
| 2006:Q1 | 0.128 | 0.109 |
| 2007:Q1 | 0.127 | 0.119 |
| 2008:Q1 | 0.118 | 0.124 |
| 2009:Q1 | 0.117 | 0.127 |
| 2010:Q1 | 0.115 | 0.126 |

SOURCE: Calculated using data from Bureau of the Census/Haver, WISER/Haver

## Looking Forward: The Great Trade Recovery?

The export industry in the Fifth District has started to recover following the great trade collapse. District goods exports grew at an average quarterly rate of 4.8 percent from the second quarter of 2009 through the first quarter of 2010. U.S. export activity also expanded over the period as goods exports expanded an average 5.7 percent each quarter.

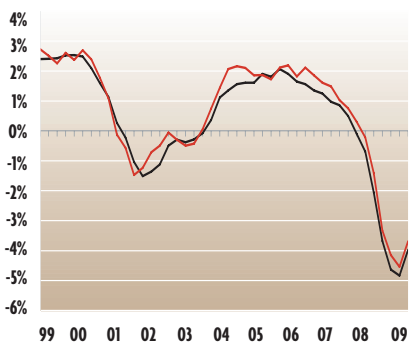
Nonetheless, international demand remains weak and total exports are not yet back to their pre-collapse levels either in the Fifth District or in the United States overall. Given the diversity of District exports, however, and the great similarity between regional and national export makeup and growth trends, Fifth District firms are well-placed to benefit from a national and global return to normal patterns — and growth — in trade activity. **RF**

# State Data, Q4:09

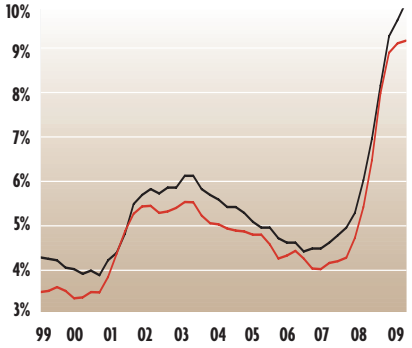
| | DC | MD | NC | SC | VA | WV |
|---|---|---|---|---|---|---|
| **Nonfarm Employment (000s)** | **702.1** | **2,499.1** | **3,890.9** | **1,809.4** | **3,602.5** | **735.4** |
| Q/Q Percent Change | -0.2 | -0.4 | 0.3 | 0.0 | -0.4 | -0.6 |
| Y/Y Percent Change | -0.2 | -3.1 | -4.5 | -4.3 | -3.6 | -3.4 |
| **Manufacturing Employment (000s)** | **1.4** | **117.5** | **434.0** | **207.5** | **232.9** | **49.5** |
| Q/Q Percent Change | 0.0 | 0.9 | -0.9 | -0.8 | -0.9 | 0.3 |
| Y/Y Percent Change | -6.7 | -6.0 | -12.9 | -12.1 | -9.7 | -10.9 |
| **Professional/Business Services Employment (000s)** | **149.0** | **383.5** | **464.4** | **208.4** | **636.7** | **59.0** |
| Q/Q Percent Change | 1.5 | 0.4 | 1.9 | 4.0 | 0.4 | 0.0 |
| Y/Y Percent Change | -1.3 | -2.6 | -5.0 | -2.7 | -2.9 | -3.0 |
| **Government Employment (000s)** | **245.0** | **491.3** | **727.2** | **351.8** | **692.4** | **148.6** |
| Q/Q Percent Change | -0.6 | -0.4 | 2.3 | 0.6 | -0.4 | -1.2 |
| Y/Y Percent Change | 4.0 | 0.2 | 2.1 | 1.2 | -1.0 | 0.4 |
| **Civilian Labor Force (000s)** | **332.5** | **2,960.5** | **4,521.7** | **2,172.7** | **4,147.3** | **788.5** |
| Q/Q Percent Change | 0.3 | -0.6 | -0.1 | -0.3 | -0.6 | -1.1 |
| Y/Y Percent Change | -0.4 | -2.0 | -1.3 | 0.4 | -0.2 | -1.8 |
| **Unemployment Rate (%)** | **11.6** | **7.3** | **10.9** | **12.3** | **6.8** | **8.9** |
| Q3:09 | 10.8 | 7.2 | 10.9 | 12.1 | 6.9 | 8.6 |
| Q4:08 | 7.7 | 5.4 | 7.8 | 8.7 | 4.8 | 4.9 |
| **Real Personal Income ($Mil)** | **36,107.6** | **251,232.4** | **295,639.4** | **132,751.6** | **315,566.7** | **53,340.6** |
| Q/Q Percent Change | 0.3 | -0.1 | 0.2 | 0.3 | -0.1 | -0.3 |
| Y/Y Percent Change | -0.5 | -0.3 | -0.9 | -1.1 | -0.5 | -0.4 |
| **Building Permits** | **421** | **2,974** | **7,519** | **3,804** | **4,723** | **367** |
| Q/Q Percent Change | 158.3 | 23.3 | -19.7 | -12.9 | -12.6 | -50.1 |
| Y/Y Percent Change | 902.4 | 57.4 | -6.7 | 10.5 | -6.2 | -8.9 |
| **House Price Index (1980=100)** | **572.8** | **442.0** | **327.7** | **333.5** | **420.6** | **225.3** |
| Q/Q Percent Change | 1.6 | -1.7 | -1.3 | -0.7 | -0.7 | -0.4 |
| Y/Y Percent Change | -1.5 | -7.7 | -3.4 | -3.2 | -4.3 | -1.4 |
| **Sales of Existing Housing Units (000s)** | **10.4** | **87.6** | **162.8** | **81.6** | **120.4** | **32.8** |
| Q/Q Percent Change | 18.2 | 16.5 | 13.7 | 11.5 | -3.2 | 13.9 |
| Y/Y Percent Change | 62.5 | 49.0 | 32.6 | 25.2 | 14.0 | 41.4 |

NOTES:
Nonfarm Payroll Employment, thousands of jobs, seasonally adjusted (SA) except in MSAs; Bureau of Labor Statistics (BLS)/Haver Analytics, Manufacturing Employment, thousands of jobs, SA in all but DC and SC; BLS/Haver Analytics, Professional/Business Services Employment, thousands of jobs, SA in all but SC; BLS/Haver Analytics, Government Employment, thousands of jobs, SA; BLS/Haver Analytics, Civilian Labor Force, thousands of persons, SA; BLS/Haver Analytics, Unemployment Rate, percent, SA except in MSA's; BLS/Haver Analytics, Building Permits, number of permits, NSA; U.S. Census Bureau/Haver Analytics, Sales of Existing Housing Units, thousands of units, SA; National Association of Realtors®

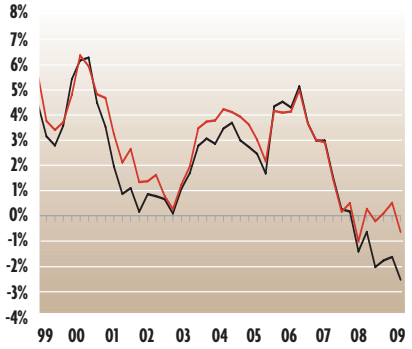
## Nonfarm Employment
Change From Prior Year
First Quarter 1999 - Fourth Quarter 2009




## Unemployment Rate
First Quarter 1999 - Fourth Quarter 2009

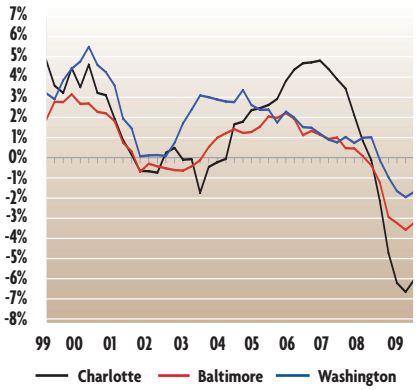



## Real Personal Income
Change From Prior Year
First Quarter 1999 - Fourth Quarter 2009

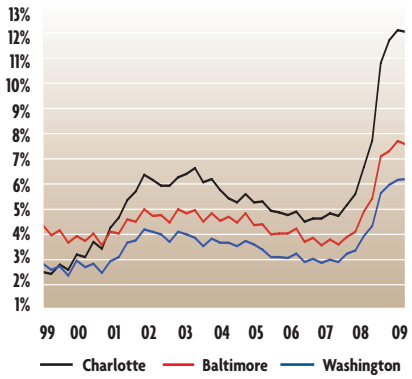



Fifth District — United States

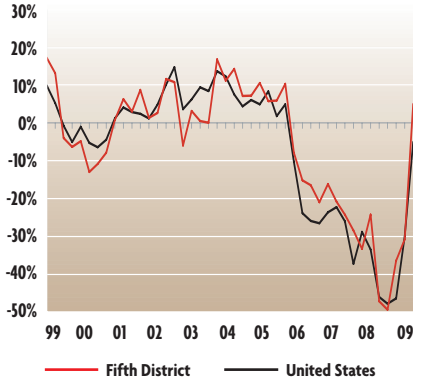
## Nonfarm Employment Metropolitan Areas
Change From Prior Year
First Quarter 1999 - Fourth Quarter 2009



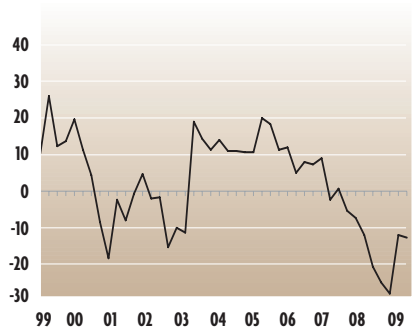

## Unemployment Rate Metropolitan Areas
Change From Prior Year
First Quarter 1999 - Fourth Quarter 2009



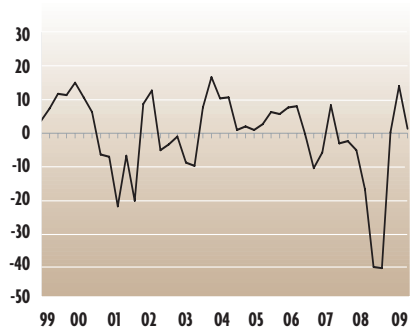

## Building Permits
Change From Prior Year
First Quarter 1999 - Fourth Quarter 2009



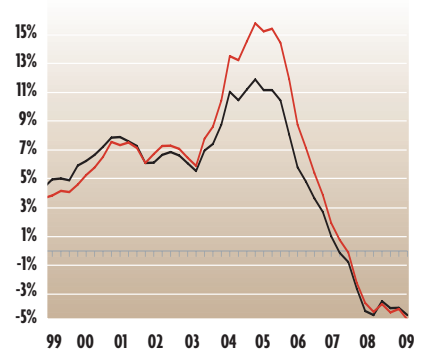

## FRB—Richmond Services Revenues Index
First Quarter 1999 - Fourth Quarter 2009




## FRB—Richmond Manufacturing Composite Index
First Quarter 1999 - Fourth Quarter 2009




## House Prices
Change From Prior Year
First Quarter 1999 - Fourth Quarter 2009




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

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

# Metropolitan Area Data, Q4:09

| | Washington, DC | Baltimore, MD | Hagerstown-Martinsburg, MD-WV |
|---|---|---|---|
| **Nonfarm Employment (000s)** | **2,393.1** | **1,270.7** | **96.8** |
| Q/Q Percent Change | 0.1 | 0.2 | -0.5 |
| Y/Y Percent Change | -1.7 | -3.2 | -4.0 |
| **Unemployment Rate (%)** | **6.2** | **7.6** | **9.4** |
| Q3:09 | 6.2 | 7.7 | 9.1 |
| Q4:08 | 4.3 | 5.4 | 6.3 |
| **Building Permits** | **2,874** | **1,325** | **145** |
| Q/Q Percent Change | 2.6 | 20.2 | -30.3 |
| Y/Y Percent Change | -1.8 | 93.7 | -14.7 |

| | Asheville, NC | Charlotte, NC | Durham, NC |
|---|---|---|---|
| **Nonfarm Employment ( 000s)** | **165.7** | **806.6** | **284.6** |
| Q/Q Percent Change | 0.1 | 1.0 | 1.4 |
| Y/Y Percent Change | -5.5 | -6.1 | -2.5 |
| **Unemployment Rate (%)** | **8.8** | **12.0** | **7.8** |
| Q3:09 | 8.9 | 12.1 | 8.3 |
| Q4:08 | 5.8 | 7.7 | 5.4 |
| **Building Permits** | **255** | **1,436** | **508** |
| Q/Q Percent Change | -16.1 | -28.0 | 27.6 |
| Y/Y Percent Change | -3.0 | -28.8 | 49.9 |

| | Greensboro-High Point, NC | Raleigh, NC | Wilmington, NC |
|---|---|---|---|
| **Nonfarm Employment (000s)** | **343.0** | **500.1** | **137.8** |
| Q/Q Percent Change | 1.1 | 0.9 | -0.5 |
| Y/Y Percent Change | -6.2 | -4.2 | -4.8 |
| **Unemployment Rate (%)** | **11.4** | **8.9** | **10.4** |
| Q3:09 | 11.6 | 9.1 | 10.1 |
| Q4:08 | 7.6 | 5.8 | 7.1 |
| **Building Permits** | **428** | **1,228** | **402** |
| Q/Q Percent Change | -22.2 | -7.8 | -31.2 |
| Y/Y Percent Change | -26.7 | -1.3 | -20.4 |

| | Winston-Salem, NC | Charleston, SC | Columbia, SC |
|---|---|---|---|
| **Nonfarm Employment (000's)** | **208.7** | **283.6** | **347.6** |
| Q/Q Percent Change | 1.0 | 0.3 | 1.0 |
| Y/Y Percent Change | -4.5 | -4.3 | -4.0 |
| **Unemployment Rate (%)** | **10.0** | **10.3** | **10.0** |
| Q3:09 | 10.2 | 10.2 | 9.9 |
| Q4:08 | 6.8 | 7.0 | 7.2 |
| **Building Permits** | **142** | **694** | **959** |
| Q/Q Percent Change | -56.8 | -21.8 | 18.2 |
| Y/Y Percent Change | -46.0 | -13.0 | 55.4 |

| | Greenville, SC | Richmond, VA | Roanoke, VA |
|---|---|---|---|
| **Nonfarm Employment (000's)** | **293.8** | **598.1** | **154.9** |
| Q/Q Percent Change | 0.6 | 0.0 | 1.0 |
| Y/Y Percent Change | -6.2 | -5.2 | -4.6 |
| **Unemployment Rate (%)** | **11.1** | **7.6** | **7.2** |
| Q3:09 | 11.1 | 7.8 | 7.5 |
| Q4:08 | 7.4 | 4.8 | 4.4 |
| **Building Permits** | **352** | **816** | **103** |
| Q/Q Percent Change | -11.3 | -16.2 | -12.0 |
| Y/Y Percent Change | 12.8 | -21.9 | 0.0 |

| | Virginia Beach-Norfolk, VA | Charleston, WV | Huntington, WV |
|---|---|---|---|
| **Nonfarm Employment (000s)** | **734.1** | **147.3** | **116.4** |
| Q/Q Percent Change | -0.8 | -0.3 | 1.4 |
| Y/Y Percent Change | -3.4 | -4.7 | -3.2 |
| **Unemployment Rate (%)** | **6.9** | **7.3** | **7.8** |
| Q3:09 | 7.0 | 7.1 | 8.2 |
| Q4:08 | 4.8 | 3.4 | 5.2 |
| **Building Permits** | **1,255** | **47** | **8** |
| Q/Q Percent Change | 5.6 | 0.0 | 14.3 |
| Y/Y Percent Change | 93.7 | -17.5 | 60.0 |

For more information, contact Sonya Ravindranath Waddell at (804) 697-2694 or e-mail Sonya.Waddell@rich.frb.org

# OPINION

# Too Big to Fail and the Distortion of Compensation Incentives

BY JOHN A. WEINBERG

We sometimes think of compensation for employment as being a pretty straightforward thing — you get paid a fixed rate for the amount of time you work. But many jobs involve choices that the worker makes on a daily basis — choices that affect the outcomes achieved but are hard for the worker's boss to directly observe or influence.

For instance, it becomes difficult to simply say "you do X and I'll pay you Y" when X involves managing a portfolio of assets. How do you know if the assets have been effectively managed? Of course, you can look at the results achieved — for instance, the returns on investments — and compensate the manager based on those returns. But the results are likely to depend both on choices made by the portfolio manager and on random factors beyond the manager's control.

In general, you would like to be able to base compensation on an indicator of whether the manager made sound choices, but such indicators are hard to come by. After-the-fact indicators, like the actual portfolio performance, although imperfect, may often be the best you can hope for. By rewarding performance after the fact, a compensation arrangement faces the trade-off between giving the manager an incentive to make good decisions and exposing the manager to risks beyond his control — risks that make the job less desirable to begin with.

The trade-off between risks and incentives is the fundamental problem in designing compensation schemes in large organizations. The problem certainly arises in banks and other financial institutions, where pay policies have been argued to have increased incentives for taking large risks that contributed to the financial crisis. And in the wake of the crisis, efforts have begun, both in the United States and internationally, to increase the regulatory scrutiny of compensation practices in large banks. But what exactly is the problem that regulation needs to fix?

Designing compensation schemes is complicated, because of the difficulties in measuring performance and tying it to the actions of employees. But typically, a firm that seeks to operate in the best interest of its shareholders has an incentive to create the best compensation scheme it can with the tools it has. What might get in the way of a firm's ability to strike the best possible balance between risk and incentives?

Designing compensation schemes is complicated, because of the difficulties in measuring performance and tying it to the actions of employees.

While the common narrative that many firms' pay practices gave executives an incentive to take excessive risks may have been true, it might not have been because compensation schemes were poorly aligned with shareholder interests. That is, it could have been the case that shareholders themselves had an inefficiently high appetite for risk-taking by large financial firms and that executive compensation was well-aligned with shareholders' distorted interests.

For financial firms, that distortion comes from the safety net provided by deposit insurance as well as the implicit subsidy that comes from some firms being viewed as too big to fail. These protections make creditors less concerned about the risks taken by a firm, resulting in lower costs of debt financing. And since shareholders benefit from higher returns, the safety net will tend to increase a leveraged financial firm's interest in taking risks. So absent regulatory or supervisory intervention, one might expect such firms to arrange their executives' compensation in ways that encourage, or at least do not discourage, risky decisions.

In the presence of a safety net that distorts financial institutions' incentives for risk, regulation needs to replace the discipline that would otherwise come from market forces. Whether that regulation is most effective when applied to compensation practices or more directly to the risk-taking activities of a firm is somewhat of an open question. But the effectiveness of either approach will be enhanced by a recognition that the fundamental source of incentive problems is not in compensation practices per se but in the protections of the financial safety net. **RF**

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

# NextIssue

## The Furniture Factor

Consumers typically defer furniture purchases during recessions, but more buyers than expected showed up last spring at the High Point Market in North Carolina. The number of registered attendees reached its highest level in two years, raising hopes among manufacturers and retailers.

## The Trying State of Public Pensions

Public pensions are facing shortfalls across states and municipalities in part because of accounting rules that allow some administrators to apply optimistic assumptions that result in lower funding levels. What fixes are being considered?

## The Economics of Music

It's no secret that the music industry has changed with the growing popularity of both Internet purchases and file-sharing software. As consumers begin accessing music in different ways, recording labels and artists alike are preparing for a world where the CD is no longer king. Firms must reconsider which products they wish to offer — and how to market them.

### Interview

Bruce Caldwell of Duke University will discuss why the history of economic thought matters for today's economists, who typically employ significantly different methods than their predecessors, but whose work often builds on time-tested ideas.

### Economic History

Many idealized societies took root in the 19th century against a backdrop of industrialization. Early efforts included Robert Owen's "village of cooperation" in New Harmony, Ind. How did these experiments fare, and what influence did they have on seemingly similar communities today, including one in central Virginia?

### Jargon Alert

It's commonly thought that firms' profitability is hurt by economic regulation. That's often true — except for some firms that use regulation to their advantage, by stifling competition, for instance. Find out how "regulatory capture" works and learn about some prominent historical examples.

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# special issue

This special issue of *Economic Quarterly* is devoted to Douglas Diamond and Philip Dybvig's seminal 1983 article on bank fragility and banking regulation, which continues to **provide insights for today's policymakers** and researchers.

The articles in this issue explore the influence of Diamond and Dybvig's article on subsequent economic research, **extend our understanding of current financial phenomena**, and examine how the model might be used to evaluate new regulations and banking policies.