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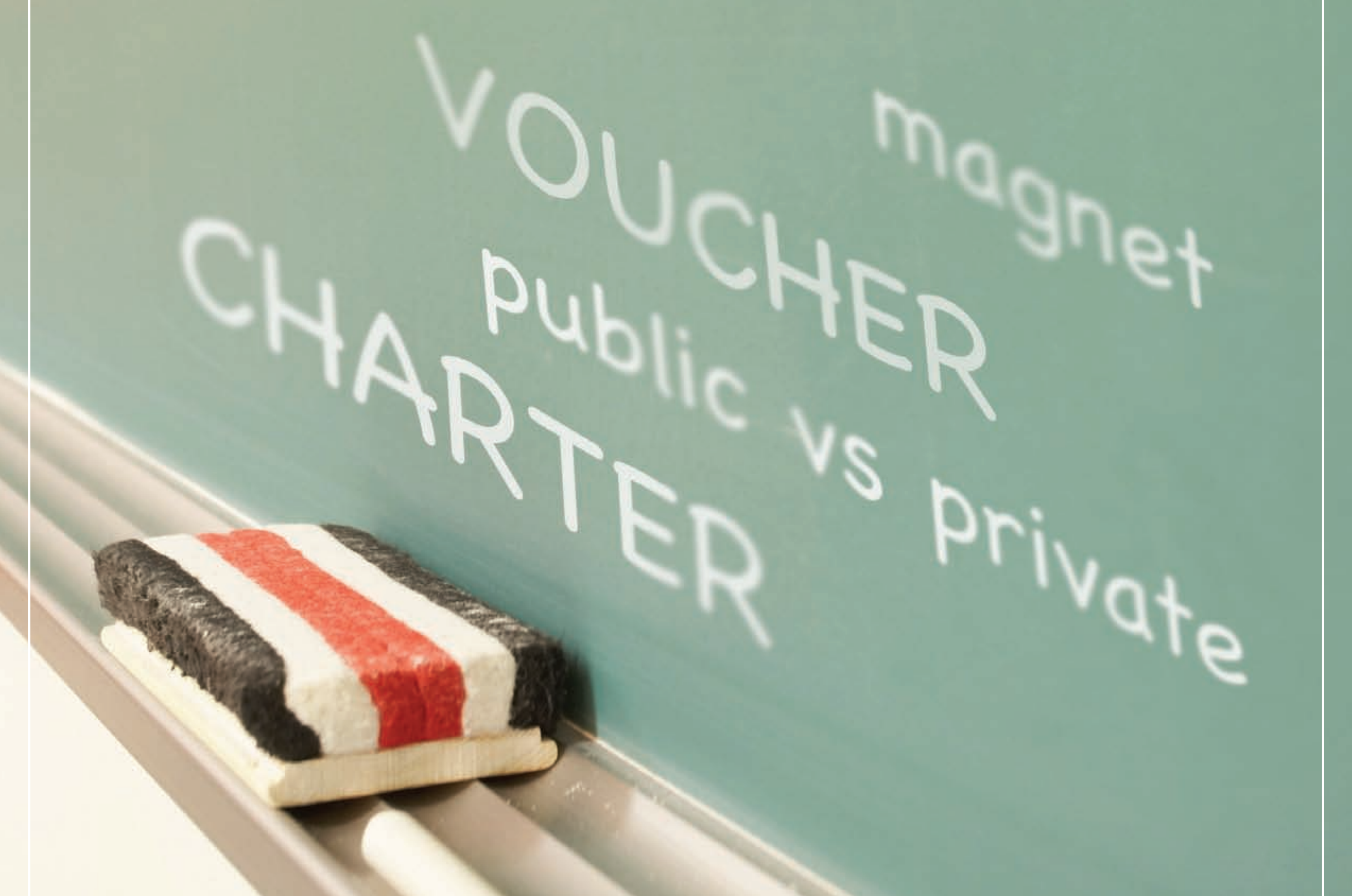
Making the Grade?

The Debate Over School Choice



• Betting on Prediction Markets

• Decoding the Yield Curve • Interview with Kip Viscusi

PHOTO: GETTY IMAGES

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Lessons of the Phillips Curve

Recent estimates suggest that real gross domestic product increased at a relatively slow annual rate of around a half of a percent in the first quarter of 2007. Meanwhile, year-over-year core (PCE) inflation has been fluctuating around 2¼ percent. While the latter figure may sound benign, I view it, and the general upward trend in prices over the past few years, with caution. Inflation, in my opinion, has been too high and should be brought down. But will doing so also lower economic growth? This raises a fundamental question facing the Federal Reserve and one that has been at the core of macroeconomics for the past 50 years. What is the relationship between growth and inflation?

In 1957, A.W. Phillips looked at data on unemployment and wage inflation in the United Kingdom and found that as unemployment went down, wage inflation tended to go up. This statistical relationship became known as the "Phillips curve." Phillips' work was highly influential, but in the decades since he published his findings, economists' understanding of this relationship has evolved significantly, and I would like to comment on that issue here.

In light of some additional work, many economists were convinced that Phillips' empirical findings also held for the United States, and had argued that this implied a set of choices for society. If you wanted faster economic growth, you should put more money into the economy. This would produce higher inflation, but that was a trade-off sometimes worth making. Conversely, if you felt inflation was getting too high, you should take money out of the economy. In such a world, ambitious management of the macroeconomy seemed possible.

Beginning in the late 1960s, economists came to recognize the importance of people's expectations for the relationship between inflation and real economic indicators such as unemployment. Inflation that was anticipated would not stimulate real economic growth, nor would disinflation that was anticipated slow it. Over the long run, they argued, economic growth was determined by fundamentals such as productivity and population growth. The appearance of a correlation between inflation and unemployment in the data was the result of episodes in which unanticipated changes in inflation had temporary real effects.

This theory gained credence in the 1970s, as the U.S. economy experienced both slow economic growth and rising inflation. The original Phillips curve seemed to be breaking down, and the menu of options that policymakers supposedly had at their disposal no longer seemed useful. At the same time, a group of economists began to focus on the forward-looking nature of people's expectations. This "rational expectations" approach to the Phillips curve suggested that the public understands when policymakers might be tempted to try to exploit the seeming relationship between inflation and unemployment, and change their expectations even before a policy action has been taken. As a result, an attempt to bring down unemployment by letting inflation rise a bit will not work — prices will rise but growth will not.

Modern work builds on this approach by studying economies in which realistic imperfections in markets create a short-run relationship between inflation and real variables similar to what we observe in the data. These models have the important implication that the relationship between inflation and real activity is not *causal*. Both inflation and unemployment are the outcomes of the behavior of markets for goods and for labor. In turn, the behavior of markets is the product of decisions made by an array of households, firms, and policymakers. If people are forward-looking, their expectations about the future conduct of policy will play the dominant role in how inflation and unemployment interact. This means that unless policymakers can influence expectations, they will have only limited ability to fine-tune the economy, even temporarily, and that maintaining economic stability hinges largely on people's confidence in future policy actions.

In the late 1970s and early 1980s, the Federal Reserve under Paul Volcker began a long and often difficult campaign to regain the credibility it had lost during the previous decade. Alan Greenspan continued that fight, and by the 1990s, the Fed arguably had established such credibility. Happily, the economy responded well: We witnessed rapid economic growth without a concomitant rise in inflation. In light of the modern understanding of the Phillips curve, the real lesson of the Volcker-Greenspan disinflation is that the best contribution the Fed can make to economic growth is to keep inflation low and stable. And the key to low inflation is the stability of people's expectations about the future conduct of monetary policy.

Monetary policy works best when it allows the real economy to respond appropriately to economic fundamentals, rather than attempts to insulate the economy from shocks by tolerating swings in inflation. This is the lesson of the modern Phillips curve and of our macroeconomic history over the last half century.

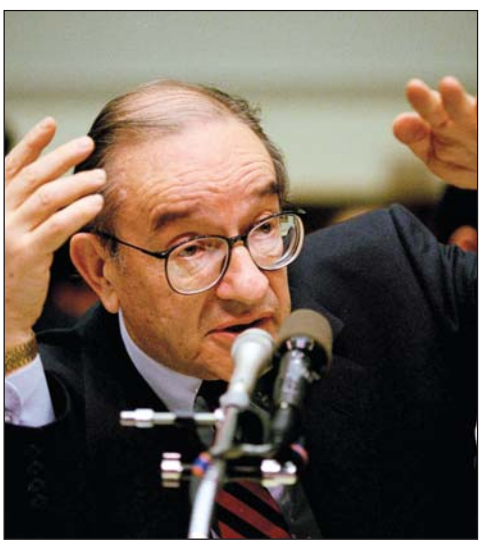
JEFFREY M. LACKER
PRESIDENT
FEDERAL RESERVE BANK OF RICHMOND

FEDERAL RESERVE

The Evolution of Fed Communications

BY DOUG CAMPBELL

In a pivotal 1994 meeting, Fed leaders debated whether to open up about their actions



Former Federal Reserve Board Chairman Alan Greenspan, seen here testifying before Congress in February 1994, led a movement toward greater openness in Fed communications.

PHOTOGRAPHY: AP IMAGES

> ***The Fed is evidently capable of confounding people — absolutely flummoxing them — by saying what it plans to do, then doing it, and then promptly announcing what it had done.***
>
> — Dow Jones News Service
> Feb. 7, 1994

Just before 11 a.m., Feb. 4, 1994, the Federal Reserve released a three-paragraph statement. The Federal Open Market Committee, Fed Chairman Alan Greenspan said in part, had decided to "increase slightly the degree of pressure on reserve positions. The action was expected to be associated with a small increase in short-term money market interest rates."

Though vague by today's standards, the release's import was clear. It marked the first time the Fed announced a change in monetary policy as soon as it was made. Until the winter of 1994, indications of the central bank's stance on the fed funds rate were indicated primarily through operations in the money market. The Feb. 4 release was in fact the beginning of an evolution — if not quite a revolution — in Fed communications.

Why did the Fed keep such a veil of secrecy over its formulation and stance of monetary policy for so long, and why has it taken more steps toward openness recently? Almost all the main issues are laid out in FOMC transcripts from that two-day February meeting. During that landmark session, FOMC members debated the pros and cons of immediately announcing their policy stance, wondering aloud about the implications for the Fed's flexibility and credibility. Of paramount concern was the prospect that the FOMC would be misunderstood, no matter what it did.

Message Moratorium

The Fed has always found ways to communicate with the public. But until recently, few of those ways were terribly direct, and none very immediate.

Beginning in 1935, with the modern-day creation of the FOMC, the Fed issued brief summaries of its policy decisions, called the Records of Policy Actions, on an annual basis. At the same time, it kept minutes of policy deliberations for internal use.

In 1967 came the release of the FOMC minutes, 90 days after each meeting. Also published with a 90-day lag were the Records of Policy Actions. In 1975, the lag in release of minutes was shortened to 45 days, and then in 1976 to 30 days.

Other communication vehicles included the chairman's semiannual reports to Congress, the so-called Humphrey-Hawkins Report. Since 1983 the Beige Book has publicly summarized economic conditions in each of the 12 Federal Reserve districts throughout the country. Finally, there were speeches by Fed governors and Reserve bank presidents.

But announcements immediately following FOMC meetings simply didn't exist. The main way the Fed disclosed its policy actions was through open market operations — chiefly, daily repurchase agreements in which the New York Fed's trading desk pumps up or drains reserves of the nation's banking system. Even there, information was limited: Only the amount of the repurchase agreements transacted was released, with nothing about rates, prices, or size of propositions for the overnight loans.

FOMC members justified this shroud as key to their effectiveness. They even spelled it out at their meeting on June 20, 1967. "For years, Federal Reserve officials argued that immediate release of policy decisions would make markets more unstable and policy implementation more costly and difficult," said St. Louis Fed President William Poole in a 2005 speech, referring to the 1967 meeting. "Creating these effects through disclosure would obviously be inconsistent with the Fed's public responsibilities."

Michael Woodford, a Columbia University economist who has studied Fed communications, suspects another motivation as well. "My guess is that bureaucrats in most organizations would prefer not to have to explain to outsiders what they're doing."

Views on how much the Fed should say in public about its formulation and stance of monetary policy began to change in the early 1990s. Politicians were pressuring the Fed to open up. Henry Gonzalez, then-House Banking Committee chairman, was demanding that the Fed make public details of its deliberations on monetary policy. Motivating some of this pressure was the 1993 discovery that the Fed had kept unedited transcripts of its FOMC meetings since 1976.

Facing these developments, FOMC members decided to release lightly edited versions of those transcripts with a five-year lag. But it wasn't enough to satisfy those seeking more communication. Milton Friedman, a frequent critic of the Fed, was one of the leaders in the early 1990s in calling for openness. He noted that a cottage industry of Fed watchers had sprouted up on Wall Street, reading the tea leaves of repurchase agreements and opaque speeches.

"Prompt release of the directive would deprive the Fed watchers of their employment but would improve the operation of the money market by ensuring that prompt information was available to all participants alike," Friedman wrote in a *Wall Street Journal* commentary with his longtime collaborator Anna Schwartz. "It would also increase the effectiveness of the Fed's operations, since better informed market participants would have an incentive to speed the attainment of the Fed's objectives."

The Debate

So it was that FOMC members began to air their positions on the merits of opening up. Members were steadfast that they wouldn't bow to political pressure. At the same time, they were willing to reconsider FOMC communications with a view toward making it easier for the public to understand their stance on monetary policy.

The Feb. 3-4, 1994, FOMC meeting was widely anticipated as a possible landmark occasion, both inside and outside the Fed. Besides the communication issue, it had been five years since the last rate increase, and two since any move whatsoever. A few days earlier, Greenspan had strongly indicated in Congressional testimony that a rate hike was afoot. Transcripts from the meeting reveal a lively discussion, one in which members fretted about preserving flexibility while living up to their responsibilities.

Greenspan's views on an announcement were already known to members. He favored an immediate public statement but wanted to make clear that it would not set precedent. He opened the monetary policy section of the Feb. 3 gathering by outlining his case. "I am particularly concerned that if we choose to move tomorrow [meaning, tighten monetary policy], we make certain that there is no ambiguity about our move," Greenspan said. "I would very much like to have the permission of the committee to announce that we're doing it and to state that the announcement is an extraordinary event."

In addition, Greenspan argued, nothing was forcing the Fed to make this announcement a regular occurrence. "The issue of whether something is precedential or not is under our control. We don't have to announce our policy moves; there's nothing forcing us to do so, and I cannot believe that there will be legislation requiring that."

Richard Syron, Boston Fed president, also favored a public announcement on the upcoming policy move. But he wondered if the reaction would serve as a guide on whether to make future such announcements. "My own forecast would be that this would pull the teeth in a longer-term sense, which we are not resolving now, on a lot of these issues about disclosure. I know these issues wouldn't all go away."

If there was a precedent to be set, Greenspan said, it was that announcements would be expected when the Fed had acted after a long time of leaving policy unchanged. "What I'm saying is that the first time we move the funds rate after this extended period, we are hitting a 'gong.'"

San Francisco Fed President Robert Parry was the first to speak in favor of a commitment to continued announcements: "We ought to have a discussion as quickly as is feasible about the desirability of similar statements in the future because I think some of us believe there is some advantage to doing it on a continued basis."

Robert Forrestal, president of the Atlanta Fed, disagreed about the need for regular announcements. His suggestion was to make explicit in the announcement that further announcements would not necessarily be forthcoming. "I have a real concern that there's a risk that we're going to be pushed by pressures — not necessarily legislation but other pressures — to make this an ongoing operating procedure. If that's the case, I think we would lose some flexibility," Forrestal said. "If we can draft a statement that clearly indicates this is not a precedent but a one-time event because of the peculiar circumstances, then I would support your [Greenspan's] recommendation."

Worries about setting precedent aside, some members noted that an announcement carried certain advantages, the main one being that the FOMC could better control the message of the day. Jerry Jordan, Cleveland Fed president, said that without an announcement, the press and public might wrongly conclude that the committee was trying to curb growth, when in fact such price stabilization efforts were also progrowth. "The rationale for it [the tightening] as a growth-sustaining move is extremely important. Only by putting out a statement can we get that message out there, or at least make an effort to say that this is not an antigrowth move but one that is designed to enhance the longevity of this expansion."

Jordan's comment gets to the heart of what was really going on in the boardroom that day. Many FOMC members were interested in transparency because they believed it would make monetary policy more effective. By announcing why they acted, members could influence the public's expectations about the future course of inflation — and the Fed's ability to deal with it.

That may not sound like such a radical idea in 2007. But for the Fed in 1994, paying attention to public expectations was still relatively new. It was former Chairman Paul Volcker who first implemented the practice. Starting in 1979, the Fed began a famous fight against inflation, slowing the growth of the money supply so as to bat down rising prices. It took five years of mostly tight monetary policy for the public to finally believe that the Fed was serious and committed about fighting inflation.

By 1994, open communication was seen as a tool to further manage expectations about the future path of interest rates, and by extension enhance the Fed's hard-won credibility. As economist Woodford put it in a 2005 paper: "Better information on the part of market participants about central-bank actions and intentions should increase the degree to which central-bank policy decisions can actually affect these expectations, and so increase the effectiveness of monetary stabilization policy." That's why it was so important to Jordan that any statement include an explanation of the Fed's rationale for raising rates.

Around the Table

The debate was not entirely linear, bopping back and forth between the issues as members were polled. Thomas Hoenig, Kansas City Fed president, revisited the "precedent" problem, arguing that there was no way around one being set. Without saying whether he favored an announcement in the first place, he argued that doing so would essentially back the FOMC into a corner: "I have a hard time understanding how this would not be precedential. ... I think it will be difficult from a credibility point of view to argue against announcing in the future should we want to make that argument."

Greenspan responded: "We're saying there are different types of changes [requiring statements]. For example, in 1979 there was a major change. Chairman Volcker and his staff went out and had a big press conference. There are certain individual events where periodically the Federal Reserve has made special statements; I'm merely stipulating that this is one of them. Frankly, with the exception of the stock market crash in October 1987, it's the first one since I've been here." If the committee four weeks later raised rates again, "I don't see any reason why a statement would be appropriate at that later time," Greenspan said. In the end, it was a question of whether the FOMC could control the issue and, in Greenspan's view, it could.

Thomas Melzer, president of the St. Louis Fed, envisioned some potentially embarrassing media coverage with an announcement that went out of its way to say it was a one-time thing. "I think there is a risk of a headline along the lines of 'In an unprecedented move, the Fed announced ... saying it wasn't setting a precedent,'" Melzer said.

And then came an animated back and forth between Melzer and Greenspan.

> *Melzer:* "Are we obligated to say anything about the vote, for example? I'm not sure. Again, I'd prefer just to say what the action was. It's a decision of the committee, but if we get into disclosing the vote, that begins to set other types of precedents that could be relevant when we get to the point of deciding this issue on a permanent basis."
>
> *Greenspan:* "Look, the main issue here is that, as far as I'm concerned, I would like us to stand up and be counted. We are the central bank and we are making a major move."
>
> *Melzer:* "Right, I agree."
>
> *Greenspan:* "And to do it in an ambiguous manner I think is unbecoming of this institution."

How to get around the precedent problem? Greenspan suggested that a partial solution was to have the announcement made by him, not by the committee, a proposal that prompted a few jokes. "Now, if we decide to do it on a permanent basis, then it's a committee issue," Greenspan said. "But marginally it's of a less precedential nature if I do it."

Edward Boehne, president of the Philadelphia Fed, responded: "If it doesn't work, the committee could fire the chairman!"

Parry chimed in: "That's right."

"Well, maybe we ought to bring that issue up before the vote!" Greenspan said amid laughter.

A Consensus Builds

A few participants spoke up in favor of the statement, particularly if it came with some sort of "one-off" language. Joan Lovett, manager for domestic operations with the New York Fed, put it this way: "I think that it can't be harmful ... It tells everybody what's happening and it leaves no room for ambiguity, and if it's phrased the way you are suggesting, it's not setting a stage for people to have expectations of an announcement every time there is a policy change going forward."

Gary Stern, president of the Minneapolis Fed, made the case that an announcement would level the playing field in terms of market participants understanding the Fed's message: "I happen to agree with those who think this will turn out to be precedential and from my perspective that's fine because I think we've been in an awkward situation where we have kind of acknowledged that people in the markets get the news and the signal immediately, but for those who are not close to the markets the news kind of dribbles out depending on how quickly they read the financial press or consult other sources of information."

Richmond Fed President Al Broaddus was among those arguing in favor of a release: "There are risks of not doing this [making a statement]. If there were any confusion tomorrow going into the weekend or this thing gets played out in the *New York Times* on Saturday and Sunday or on CNN, I think we would have a real mess." And Dallas Fed President Robert McTeer went so far as to say, "I personally wouldn't mind seeing it become a precedent."

The afternoon was turning dark and it was time to wrap up. They would gather again the next day at 9 a.m. Adjourning the meeting, Greenspan warned against leaks of the day's discussion, alluding to the embarrassing release of notes from a fall 1993 conference call to Rep. Gonzalez. "I just beseech you to be as careful as you possibly can and not even tell your doorman where you've been!"

Nobody leaked, and the next day the Fed released an announcement just as planned to an unsuspecting public. It was, as the Associated Press described, a bolt from the blue: "In a rare display of openness, the central bank issued a three-paragraph statement Friday stating it had begun to clamp down on credit ... The disclosure took the guesswork out of Fed-watching and caught the financial markets off guard. For analysts accustomed to appraising subtle shifts in money market interest rates for clues to the Fed's thinking, the news release was a bombshell."

More Changes

Despite the initial surprise, market watchers quickly adjusted to the Fed's new openness. More moves toward transparency followed. In 1995, FOMC members agreed to release all future transcripts of their meetings with a five-year lag. On July 6, 1995, the FOMC for the first time mentioned the actual federal funds rate, saying the policy action reflected "a decline of 25 basis points." On Jan. 31, 1996, came the first mention of the actual federal funds *target* rate.

Such announcements were forthcoming every time the FOMC initiated a policy action. In 1999, announcements became standard practice, whether the target rate was changed or not. From that year on, there have been immediate announcements following each FOMC meeting.

The language contained in these regular announcements has also grown more precise. After meetings in which there were shifts in FOMC views about the future, announcements included a "balance of risks" assessment — whether the risks were greatest with regards to either inflation or growth. In 2003, the committee began adding an additional sentence about the future, such as whether present policy actions were likely to be continued. The May 2004 FOMC announcement, for example, explained that "the committee believes that policy accommodation can be removed at a pace that is likely to be measured."

More than a decade after the pivotal FOMC meeting, there is no looking back. "On the whole it's been a successful experiment," says Columbia economist Woodford. "People in the institution have come to understand that there are advantages to the institution of being clearer about what the policy targets are and what the Fed is trying to achieve in the markets."

Beyond policy announcements, FOMC minutes now are usually released three weeks after a meeting. In addition, each open market operation is followed with a detailed report of the transaction, including its amount, the sizes of propositions, and the stop-out rates and ranges. All of it has added up to a considerably more transparent Fed.

Not that there are no longer any surprises. As recently as 2004, five-year Treasury notes jumped 25 basis points — the largest swing in more than a decade — immediately after an FOMC announcement that had been widely anticipated. No policy action was taken that day. What wasn't anticipated was the FOMC's move to eliminate wording in its announcement that had indicated no rate changes would be happening "for a considerable period." The Fed had essentially signaled that it was now closer to lifting interest rates than it had been before, which is why the Treasury notes rose with the announcement.

Even now, after more than a decade of moves toward greater transparency, the Fed remains capable of confusing the markets. But Woodford says that FOMC communications are likely to become even more explicit, not less.

"There's still a search for even better and perhaps more flexible ways to communicate what the outlook for future policy is," Woodford says. "The recent experience is that it can be useful to talk about that." **RF**

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JARGONALERT

Arbitrage

BY KEVIN BRYAN

An economist is walking to lunch with an old friend. The friend stops, startled, and calls out, "Look at that hundred dollar bill on the sidewalk! How about that?" The economist walks right past it, telling his friend, "If there had been a hundred dollars there, someone would have picked it up already."

This joke gets to the heart of a key economic principle: Opportunities for risk-free profit in markets disappear quickly. Such profit is called arbitrage.

More specifically, arbitrage tends to refer to a difference in pricing of the same commodity or asset in two different markets. For example, imagine that MP3 players sell for $50 in Thailand and a buyer in California is willing to pay $100 per player. If shipping costs are $10 per player, a firm could make $40 per player by buying in Bangkok and selling in San Diego. This profit opportunity might exist briefly, but soon other people will catch on, driving up the prices of MP3 players in Thailand, driving them down in California, or both.

A more realistic example is "triangular arbitrage" in the currency market. Imagine you can get a euro for $1.25 from Broker A, a British pound for 1.5 euros from Broker B, and a dollar for 50 pence (half of a British pound) from Broker C. In this case, you could convert $100 to 80 euros at Broker A, then convert the euros to 53.33 pounds at Broker B, and finally convert the pounds to $106.66 for a profit of $6.66 per cycle. Investment houses have teams of analysts constantly on the lookout for these types of arbitrage cycles.

Many economic ideas are derived from the fact that arbitrage opportunities do not last. The concept of "covered interest rate parity" states that a currency future, or a contract to buy or sell a fixed amount of currency at some date in the future, can be priced solely by knowing the risk-free interest rate in both currencies and the current exchange rate. An example of a nearly risk-free U.S. interest rate is a short-term treasury bond, where default is almost unthinkable.

Imagine that the current exchange rate is $1.25 per euro, that the annual euro risk-free interest rate is 12 percent, and that the annual dollar risk-free interest rate is 5 percent. In this case, a euro-dollar futures contract expiring in 12 months would be $1.172 per euro. Why? Imagine that the futures contract was $1.20 per euro. A firm could borrow $100 at 5 percent interest, meaning the firm will owe the bank $105 in one year. The firm would then convert $100 to 80 euros at the current exchange rate and invest the euros in a bond paying 12 percent. In one year, the firm would have 89.6 euros, which they could convert back to dollars at $1.20 per euro, giving them $107.52. After paying the bank $105, the firm is left with $2.52 in profit. This profit is risk-free because every component — the interest rates, the current exchange rate, and the futures rate — was locked in from the beginning. An equivalent example can be constructed for futures rates lower than $1.172 per euro, where the investor would borrow euros and invest in American bonds.

The amount of money chasing these arbitrage opportunities is immense. The Bank for International Settlements estimates that more than $1 *trillion* in foreign exchange swaps and futures are traded every day, and foreign exchange is only one of a vast number of markets with arbitrage possibilities.

Problems can arise, however, when firms chase price differential where risks are involved. Some of the biggest investment houses and hedge funds in the world have been bankrupted by tantalizing "almost risk-free" profits. One of the most notorious failures in recent years is that of Long Term Capital Management (LTCM).

LTCM was a hedge fund run by a team of top investors, including two who won Nobel Prizes in economics for their work on pricing assets, which made immense profits in the mid-1990s through a complex bond price arbitrage. In the summer of 1998, however, Russia defaulted on a number of its bonds, causing investors to shift their holdings of bonds in Europe and Japan into U.S. Treasury bonds, which were considered the world's safest. Though world bond prices eventually returned to values more in line with economic fundamentals, this flight away from European and Japanese bonds resulted in a $3.5 billion bailout and the fund was closed for good by early 2000. LTCM's bond purchases were not really arbitrage at all, since there was unhedged risk that allowed a small chance for catastrophic losses.

The moral? True arbitrage opportunities are a rarity in the real world. Many of them would be better described as entrepreneurial opportunities that may prove profitable but also carry with them real risk. So the next time someone presents you with a "can't-lose" scheme that seems too good to be true, act like an economist and keep on walking past that illusory profit. **RF**

ILLUSTRATION: TIMOTHY COOK

Global Warming and American Agriculture

BY BETTY JOYCE NASH AND AARON STEELMAN

Scientists seem to have reached a consensus that global warming is a reality. For instance, the latest report from the Intergovernmental Panel on Climate Change, issued in February, stated: "Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level." But how climate change will affect the economy remains a matter of debate.

In a new paper, economists Olivier Deschênes of the University of California at Santa Barbara and Michael Greenstone of the Massachusetts Institute of Technology attempt to measure how the U.S. agricultural sector will fare. Their conclusion: Not as bad as you might expect. "If anything, climate change appears to be slightly beneficial for profits and yields," they write.

Previous research has typically employed methods that are likely to produce inaccurate estimates of the economic effect of climate change. The most common method, the hedonic approach, is unable to capture important characteristics, such as soil quality and the option value to convert land to a new purpose, that play a key role in determining agricultural output and land values. Meanwhile, the production function approach does not account for adaptive behavior by farmers in response to climate change. For instance, as temperatures rise, farmers may change their mix of crops or use different fertilizers.

Deschênes and Greenstone propose a new strategy: "Estimate the impacts of temperature and precipitation on agricultural profits and then multiply them by the predicted change in climate to infer the economic impact of climate change in this sector."

The authors use county-level data from the quinquennial Census of Agriculture from 1987 through 2002. The census data are a measure of the revenue produced with the land and do not include income from federal farm programs or earnings from off the farm. The data are used to estimate the effect of weather on agricultural profits and yields for given geographic area while accounting for both average weather conditions and unexpected shocks.

The authors also use two standard sets of predictions about climate change. The first doubles concentrations of greenhouse gases by the end of the 21st century, while the second assumes a 250 percent increase. The authors incorporate medium- and long-term climate predictions and temperature and precipitation averages across 2020-2049 and 2070-2099.

Long-run climate change predictions from these agriculture census data and weather models indicate that climate change will add to annual agricultural sector profits by 4 percent or $1.3 billion (in 2002 dollars). "Additionally, the analysis indicates that the predicted increases in temperature and precipitation will have virtually no effect on yields among the most important crops," the authors write. This suggests that effects on profits aren't because of short-run price increases.

Although the results indicate that the overall effect on U.S. agriculture is likely to be positive, some areas will be hurt by climate change. California, in particular, will be adversely affected. In the Fifth District, North Carolina is also expected to take a big hit.

Climate change will not affect the United States alone. As the Earth's temperature rises, agricultural production around the globe will be altered. That could cause changes in relative prices, thus affecting markets both internationally and domestically. The authors are unable to account for that possibility.

Similarly, their model does not deal with the potential for catastrophic weather events, which some climatologists argue will result from global warming. If severe droughts or floods occur, their estimates could be significantly off the mark.

Finally, if climate change were to produce significant changes in the agricultural sector, it is not unreasonable to believe that the complex system of federal farm subsidies would also change. This would alter farmers' incentives and the nation's agricultural production.

Despite the paper's limitations, the authors have taken an important and often contentious topic and provided a sober analysis. But more remains to be done, as the authors note. If global warming is, in fact, upon us, the job of economists is to help us understand what it will mean to human welfare. Agriculture is just one piece of the puzzle. The likely impact of climate change on human health, particularly mortality rates in developing countries, is an especially important issue — and one where economists, perhaps in collaboration with their colleagues from the physical and natural sciences, could make an important contribution. **RF**

"The Economic Impacts of Climate Change: Evidence from Agricultural Output and Random Fluctuations in Weather" by Olivier Deschênes and Michael Greenstone. *American Economic Review,* March 2007, vol. 97, no.1, pp. 354-385.

POLICY UPDATE

Interest Rate on Loans to Soldiers Capped

BY VANESSA SUMO

The Tidewater region of Virginia is home not only to various Navy facilities but also to many payday lenders. The Department of Defense thinks that this is not a coincidence. When Congress asked the Pentagon to report on abusive lending practices aimed at military servicemen, it concluded that "predatory" lenders target soldiers and their families through their "ubiquitous presence around military installations."

Payday lenders typically make small loans of a few hundred dollars due on the borrower's next payday. In exchange for immediate cash, borrowers write post-dated checks for the amount of the loan plus a fee. In a typical transaction, a borrower pays a $15 finance charge on a loan of $100, to be repaid in two weeks. That works out to an annual interest rate of 390 percent. The cost of a payday loan can quickly balloon if this credit is routinely rolled over. For instance, a borrower would eventually pay back $490 for a mere $100 loan that is renewed or "flipped" every two weeks for an entire year (assuming that a $15 fee is charged each time). But apart from the financial well-being of its troops, the Department of Defense is also worried about debt troubles that cause soldiers to lose their security clearances, which would prevent highly trained troops from being assigned to posts where they are needed the most.

> The maximum fee that payday outfits will be allowed to charge will not be sufficient to cover the costs of extending short-term credit.

In response to these concerns, Congress recently passed a 36 percent annual interest rate cap on consumer credit extended to military servicemen and their dependents. The rate cap includes all fees and charges associated with the loan. The Department of Defense must draft implementing rules by October 2007. But a version of the proposed rules released in April has narrowed the definition of consumer credit to include only payday, vehicle title, and tax refund anticipation loans, products which were the focus of the Pentagon report. (Payday lending already has been effectively outlawed in a number of states, including North Carolina.)

The Community Financial Services Association, the national trade group for payday lenders, says that its members will stop offering loans to military personnel under this new law. The maximum fee that payday outfits will be allowed to charge will not be sufficient to cover the costs of extending short-term credit. "Payday lenders can't offer a loan at 36 percent," says the association's spokeswoman.

Some analysts worry that the rate cap will actually end up hurting soldiers and their families. If the rate cap drives lenders out of the market, then this group will lose a sometimes important source of credit. "The likely impact of such a rule would be to make military personnel with short-term credit needs significantly worse off," said William Brown, an accounting and finance professor at the University of North Carolina at Greensboro, who testified before a Senate Committee last year.

Certain characteristics of the military and its lifestyle may limit a soldier's ability to handle short-term credit crunches. Many enlisted personnel are young, usually in their early 20s, and thus tend to have little precautionary savings. Soldiers may be deployed abroad for a long period, which would make it difficult to deal with pressing financial demands at home. A report by the RAND Corporation, a nonprofit think tank, finds that a majority of military spouses believe that their frequent and disruptive moves have adversely affected their employment prospects.

In these instances, soldiers or their dependents may prefer a payday loan to bouncing a check, paying late fees on a utility bill or credit card, or going to a pawnshop, options which could turn out to be more costly. Moreover, a survey conducted by Brown with Charles Cushman, a political management professor at George Washington University, finds that military servicemen choose payday loans because of the simplicity and speed of the application process.

Banks don't compete in this market because they perceive such products as "too high risk to offer profitably except at extremely high interest rates, thus inviting criticism from media, public policy officials, and consumer advocates," wrote Sheila Bair, at the time a finance professor at the University of Massachusetts and now chairwoman of the Federal Deposit Insurance Corp. (FDIC), in a June 2005 report. Moreover, banks and credit unions may be wary of creating a similar line for fear of cannibalizing their profits from overdraft protection fees, according to Bair's study.

Despite the hesitation by some banks and credit unions, Bair thinks that they have the tools and infrastructure required to offer relatively low-cost alternatives to payday loans. A conference hosted by the FDIC late last year to discuss "affordable, responsible loans for the military" demonstrated some of the efforts in the industry to develop such products. Additionally, the FDIC plans to give banks Community Reinvestment Act credit for making small-dollar, short-term loans to military members as an alternative to payday loans. **RF**

Taxing Questions

BY DOUG CAMPBELL

"Implications of Some Alternatives to Capital Income Taxation." Kartik B. Athreya and Andrea L. Waddle, Federal Reserve Bank of Richmond *Economic Quarterly*, Winter 2007, vol. 93, no. 1, pp. 31-55.

Households face many forms of taxation. There are taxes on property, capital income, labor income, and consumption. Economic theory suggests that capital income taxation is probably the worst of the lot. A world with taxes on earnings from investments is a world where people have to set aside more today to receive a given amount of resources tomorrow. Young households interested in building retirement nest eggs, for example, must save enough to overcome the repeated taxation of their investment proceeds, a cost that grows as the household's planning horizon lengthens.

Economists have looked for ways to shift the tax base away from capital income, thinking almost anything is likely to be better for general consumer welfare. But in a new paper, researchers at the Richmond Fed sound some cautionary notes about a wholesale switch of the tax burden.

Kartik Athreya and Andrea Waddle build a model that tests some intuitive notions about placing taxes exclusively on either labor income (the income taxes filed April 15 each year), consumption spending (usually sales taxes), or some combination of both. The authors examine a world in which households face real risks; people may be laid off or get sick, and unable to work for some time. Lacking comprehensive insurance, the only way to protect against these risks is to accumulate wealth. In such a world, different tax regimes have different risk-sharing repercussions. The authors search for taxation arrangements that raise a required level of revenue but yield the least possible pain for households.

Athreya and Waddle's most important finding is that there are systematically different effects for welfare across wealth levels. In a world with low risks, for example, wealthy people would welcome a move away from capital income taxation and toward either purely consumption or labor income taxation. In a high-risk world, poor households dislike a pure labor tax, much more so than their wealthy counterparts who don't rely on jobs for the majority of their income.

There are no across-the-board conclusions, however. "You can't draw stark conclusions on which regime is best," Athreya says in an interview. "The usefulness of this paper is to illustrate that even in a relatively simple environment, uninsurable risk has to be taken seriously in evaluating any tax system."

"The Young, the Old, and the Restless: Demographics and Business Cycle Volatility." Nir Jaimovich and Henry E. Siu. Federal Reserve Bank of Minneapolis Research Department Staff Report 387, March 2007.

Economists often have attributed the economic stability the United States has experienced since the mid-1980s to three forces: structural change, effective monetary policy, and luck. In a new paper published by the Minneapolis Fed, economists Nir Jaimovich and Henry Siu add a fourth factor — demographics — which, they argue, explains as much as one-third of the reduced volatility experienced during the so-called "Great Moderation."

The authors note that young workers experience much more volatility in their employment status than the middle-aged, while near-retirees experience something in between. "When an economy is characterized by a large share of young workers, all else equal, these should be periods of greater cyclical volatility," they write. The demographic profile of U.S. workers since the mid-1980s has tilted away from the "volatile age group," thus contributing to economic stability.

"Identifying Asymmetry in the Language of the Beige Book: A Mixed Data Sampling Approach." Michelle T. Armesto et al. Federal Reserve Bank of St. Louis Working Paper No. 2007-010A, March 2007.

Evidence on whether the Federal Reserve's Beige Book — the anecdotal summary of regional economic conditions published eight times a year — accurately reflects actual economic activity has been mixed. In a new paper published by the St. Louis Fed, a foursome of economists build a model that "not only confirms the predictive power of the Beige Book, but also provides a sense of the asymmetry underlying the language of the Beige Book."

The "asymmetry" the authors refer to involves the different sorts of information conveyed by optimistic or pessimistic language. They used linguistics software to assess the degree of optimism and pessimism in each Beige Book edition. At the national level, they find that optimistic language sends signals about high frequency fluctuations in economic output while pessimistic language helps to tell us where the economy is in the underlying business cycle. At the regional level, the linguistic style of individual Reserve banks is important. For some regions, pessimistic language is the "key component relating the Beige Book to district employment. In other regions, optimism — or both characteristics — reflects the state of the economy." **RF**

FISCAL SWEETENERS

Did North Carolina Lure Dell Too Much?

In 2004, North Carolina and Virginia were hoping to attract Dell to construct a computer assembly plant within their borders. But there was a stark difference in the incentive packages offered by both states: North Carolina presented Dell with more than $270 million in tax breaks and other incentives while Virginia put $37 million on the table. North Carolina eventually won the deal and the plant is now operating in Winston-Salem. But looking back at the large discrepancy in the offers has prompted the Corporation for Enterprise Development and the North Carolina Budget and Tax Center, both nonprofit organizations, to study whether the state is getting its money's worth.

The report says that much of the difference between the two packages was the result of the set of assumptions and the models used to measure the economic impact of the Dell plant. For instance, the state of North Carolina's model relies heavily on a projected sales figure, $2.3 billion annually, to calculate the factory's impact on Gross State Product (GSP) and state revenues. The authors of the report think that this sales estimate is too high. It implies that each Dell worker would add $175,000 to the GSP, which is more than twice what the average job in North Carolina contributed in 2004.

Moreover, they feel that a model which is mostly driven by a sales figure might not be appropriate for a multistate firm. While a portion of the plant's revenues that goes toward wages and salaries will likely stay in the state, the profits generated by the factory will probably go back to the head company or be paid out to shareholders who don't necessarily live in North Carolina.

To arrive at what they feel are better estimates of the plant's impact, the authors build various scenarios that adjust some of the assumptions, tweak some of the features of North Carolina's model, and use an alternative one developed by the Iowa Department of Economic Development. They find that the estimated values from this exercise are nowhere near the $24.5 billion addition to the GSP and the $707 million net change in state revenues projected by the Commerce Department over the 20-year life of the project. The report's highest estimate shows a mere $8 billion addition to GSP and a fall in state revenues of $72 million.

But the authors say that the most obvious omission in the state's economic impact model is the failure to take into account whether firms would have chosen North Carolina even without an incentive package. Such a consideration would call for some downward adjustment in the state's offer, although it may not be easy to find this critical point.

Even if the report casts some doubt on the power of incentives, it does not altogether discourage the use of subsidies in attracting businesses. It asks policymakers to reconsider the methods and assumptions they use. "What is needed, instead, is for the state of North Carolina to be a savvy investor — for its subsidies to match and ideally surpass its competitors not in largess, but in acumen," says the report. But the Commerce Department stands by its methods. "We think that the model and the numbers we used are accurate," says Deborah Barnes, a spokeswoman for the department.

Matt Martin, a regional economist at the Richmond Fed, says that state officials can make a key mistake when they fail to compare the results of an economic impact model to the next best alternative use of public funds. "We want to make a comparison of what the world looks like with and without this [project], but not compared with nothing," he says.

Martin thinks that another way of gauging whether a state is offering too much is to compare the average salary that these jobs will fetch to the cost per job of the incentives offered by the state. If that cost is a substantial fraction of what a worker stands to receive, then the state may not be getting its money's worth.

— VANESSA SUMO

NO MORE GAS GUZZLERS IN VIRGINIA AND WASHINGTON, D.C.?

Hotbeds of Hybrid Sales

Everyone's talking about hybrid cars, and sales of these electric/gasoline-powered vehicles have increased every year since they were introduced in 2000. Virginia has ranked among the top-five states for hybrid vehicle registrations since 2003, while Washington, D.C., had the fourth-largest number of registrations among metro regions in 2006. Part of that demand may have been due to a perk that hybrid car owners had until last July — they could use high-occupancy vehicle lanes to avoid congestion on Interstates 95 and 395 in Northern Virginia. Also, hybrid owners qualify for a federal tax credit of up to $3,150, depending on the make and model of the vehicle and when it was purchased.

Could the nationwide popularity of hybrids have something to do with record-high prices at the gas pump? That may seem like a no-brainer. In fact, the relationship between gasoline prices and vehicle preferences isn't that simple. Although gasoline prices rose through August 2006, hybrid growth slowed. Registrations of hybrid vehicles increased 28 percent to 254,545 in 2006, compared with 140 percent year-to-year growth in 2005 and 91 percent growth in 2004, according to data from automotive industry consultant R.L. Polk & Co.

Automakers claim that Americans aren't willing to pay a large price premium for better fuel economy. Michael Allen, director of public affairs for the Virginia Automobile Dealers

Association, says his members have made a similar observation. "Most people are looking for something that is better than what they've got," Allen notes. But new models of traditional cars have been introduced that fare better against hybrid vehicles.

"A lot of people come to the lot looking at hybrids, [but] when they see the fuel economy of other vehicles [that sell] at a lower cost, they are buying those vehicles instead of the hybrids," Allen explains. Even SUV lovers can find new models with improved mileage, particularly "crossover" vehicles that are built on a car chassis and use a car powertrain.

Also, the demand for gasoline tends to be inelastic in the short run; that is, the quantity consumed doesn't change much when prices change. However, it becomes more elastic in the long run as elevated prices prompt consumers to rethink driving habits. Demand for fuel-efficient cars like hybrids would be expected to follow a similar pattern.

There is evidence of this trend based on the preliminary results of a study by economist Sarah West at Macalester College. West found that if gasoline prices double, sales of minivans, trucks, and SUVs fall. However, the differences weren't statistically significant until she used lagged prices. When someone thinks about buying a car, current fuel costs aren't the only consideration. Changes in prices over time have more influence.

There are other factors that influence buying decisions. George Hoffer, an economist at Virginia Commonwealth University who has studied the automobile industry, says zero-percent financing and other incentives can boost the sales of gas guzzlers even when fuel prices are rising and demand for better mileage increases. SUVs and other light trucks have wider profit margins than other automobiles, giving automakers more room to reduce prices while still making a hefty return.

Car buying decisions have always involved a combination of personal preference and practicality. While hybrids are attracting more interest for their road performance and styling as well as their fuel economy, they still can't compete on price. Only the Toyota Prius is competitive, Allen says, but that's because the company eats the added production costs. General Motors and Ford aren't in the financial position to do the same thing. — Charles Gerena

HURRY UP AND WAIT

Competition at Airports Affects Delays

While airline delays got worse in February 2007, with 33 percent of flights late, performance improved in the spring. Flights were late 26 percent of the time in March; 24 percent in April. For all of 2006, about 25 percent of the nation's flights got in late.

Delays and cancellations frustrate travelers. About 67 percent of flights arrived on time in 2006 at the Columbia, S.C., Metropolitan Airport, compared to the national average of 75 percent. Across the Fifth District, several smaller airports' punctuality in 2006 was worse than the national average, according to the U.S. Bureau of Transportation Statistics (BTS).

That's bad news for travelers making summer plans, a time when thunderstorms, for example, can wash out flights and spur cancellations. Passenger traffic, according to the BTS, rose by 1.7 percent during the first two months of 2007 over the previous year and continues to grow while airline staffing has declined.

Late arrivals vary from airport to airport. Although nonhub airports generally have fewer delays, Richmond's Richard Byrd International Airport's flights were late 32 percent of the time. (A flight is considered delayed if it arrived at or departed the gate 15 minutes or more after its scheduled time.) Among larger airports, one of the best performances was at Baltimore/Washington International Airport where nearly 80 percent of flights arrived within that 15-minute window.

Reasons for delays are more complicated than they appear. Nicholas Rupp, an economist at East Carolina University in Greenville, N.C., has studied airline on-time performance using a variety of data. People expect smaller airports to be less congested with fewer delays. While that's generally true, he says, when a hub airline services the airport, it can create more congestion.

Competition influences performance, too, with airports served by a large number of carriers with equal market share doing a better job. Airports dominated by a single carrier, like Charlotte with US Airways, or Atlanta with Delta, may not perform as well. Those airports tend to have more frequent and longer delays, Rupp says. He and co-authors Douglas Owens and Wayne Plumly have found evidence of lower service quality on less competitive airline routes.

But airports that service more than one hub airline also can be congested. Since many flights originate from hub airports, that can translate into delayed flights at small airports.

Smaller airports also have higher cancellation rates, "because they're less able to handle adverse circumstances than the big airports. If a bad snowstorm comes through, a big airport is better equipped to handle it. Or a maintenance issue, a big airport has better access to backup crews, planes, parts, and maintenance, whereas small airport don't," says Rupp.

Part of the reason for delays at all airports is simple supply and demand. More carriers are offering more flights, but without a ramp-up in runway capacity. "That is something that we're going to hear more about," he says. "They don't build many new airports." — Betty Joyce Nash

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CORRECTION: In the Winter 2007 *Region Focus*, the story "Options on the Outs" incorrectly explained the meaning of "out of the money" employee stock options. Such options have exercise prices above the trading prices, which is why they are worthless to the holders.

Academic Alternatives

The theory of school choice sounds great, but it remains controversial. Now, evidence from programs like the one in Milwaukee is beginning to move the discussion from the theoretical to the practical

BY DOUG CAMPBELL

Never in the modern history of public education in the United States have parents had more options about where to send their kids to school. Vouchers and charters, magnet schools, and even publicly financed home schooling — almost every state, major school district, and large city has some sort of school-choice program or is considering one.

Washington, D.C., is home to a federally funded effort that pays private school tuition for more than 1,800 low-income children. North Carolina has one of the country's largest charter school programs, now encompassing 92 schools. South Carolina is looking at a number of plans, from open public school enrollment to private school vouchers. Utah recently established the nation's most-encompassing voucher initiative. Perhaps most significantly, Milwaukee is in its 17th year of hosting its pioneering choice program.

Just about everything else has been tried to fix public education, from busing to smaller class sizes to ramped-up per-pupil spending and teacher salaries. But until recently, exposing schools to market forces wasn't one of them.

The theory of school choice, as popularized by economist Milton Friedman, looks like a clean solution to the problem of poor-performing schools and the underachieving students who attend them. Friedman envisioned a publicly funded system based on vouchers: Parents are given coupons that can be redeemed for their child's admission to a school of their choosing. These vouchers cover the full cost of tuition, and the money used to pay for them follows students to their schools. The idea is that with choice, parents create competition among schools, whether public or private, for students and the money that is attached to them. This changes the overall market structure for education, begetting greater overall efficiency and educational outcomes. As a result, kids learn more.

All of which sounds great. The problem is that, even with the increasing number of school-choice programs nationwide, Friedman's notion remains mostly theoretical. Most of these programs in the United States are small; many are just getting started.

PHOTOGRAPHY: ST. MARCUS LUTHERAN

In the absence of obvious evidence, it is difficult to have a civil conversation about the merits of school choice. Mention "vouchers" and expect impassioned opinions to be flung your way. One side is scorned as market zealots, the other as union shills. Even the term "choice" is loaded, having been appropriated by the movement in favor of vouchers.

Inevitably, policy debates over school choice bog down in the politics of race, religion, and organized labor. But in technical papers and academic journals, social scientists are studying U.S. school-choice programs, as limited as they are, and engaging in lively discussions. Do voucher programs really help students learn more?

Do such programs need more accountability and government regulation? Or is just the existence of "choice" a virtue unto itself? As their findings move closer to broad consensus — and in fact, they're pretty close — and as large programs like the one in Milwaukee mature, it's possible to imagine a not-so-distant future when public conversations on school choice are finally based on evidence instead of opinion.

The Milwaukee Experiment

School choice can take on many forms. There are charter schools, public institutions that operate with some autonomy from their district. Some would also include magnet schools and open enrollment among public schools as being in the spirit of choice, at least in cases when schools compete for students and funding. Finally, there are vouchers — the gold standard in school-choice programs.

To see school choice at its most robust in the United States, go to Milwaukee. Here, almost every conceivable manifestation of choice is available — 55 charter schools, open enrollment among public schools, and even accessibility to public schools outside the city.

But the main innovation has been the $111 million voucher effort, called the Milwaukee Parental Choice Program, which now pays private school tuition for up to one-quarter of the district's student population. Any student whose family lives at less than 175 percent of the poverty line qualifies. It doesn't matter if they already attend private school; any low-income student living in the district is eligible.

Some of the "choice" schools — as Milwaukee private schools that accept vouchers are known — are doing laudable things. Notre Dame Middle School, on the city's impoverished, increasingly Hispanic south side, is a showcase. This school year it has 103 students, all girls, most Hispanic, in grades five through eight.

To see school choice at its most robust in the United States, go to Milwaukee.

Ninety of the 103 current students pay with vouchers, worth $6,501 for the 2006-2007 school year. That's money that otherwise would have gone to the public school system. Vouchers cover about half of the actual cost of $12,000 per pupil to operate the school, according to Alvaro García-Vélez, president of the school and its chief fund-raiser. (His wife, Mary, is the principal.) The rest is made up with private donations.

The campus is open from 7:30 a.m. to 6 p.m. Classes are small, with no more than 15 students. Religious education is a big part of the curriculum and overall feel of the school. A picture of Jesus Christ greets entering students with the words "Ven y Sígueme" (Come and follow me). Painted on various walls in large, block lettering are slogans like "Love," "Repent," "Faith," and "Wisdom." Next door is the church where students worship at various times throughout the day. This fall the students and administrators will expand into a new $2 million building, complete with basketball gym, life science laboratories, and flat-screen TVs.

The school measures its success in many ways, but maybe the most prominent is the percentage of students who graduate and eventually go on to college — more than three-quarters do. A first step in this process is regular attendance, which is why the principal regularly hops in a van to knock on doors seeking truant students.

But the real key to Notre Dame's long-term accomplishment is contained in a large whiteboard mounted in a cramped first-floor office. On it are the names of every graduate of the school — from 1996 to present, 152 so far. Beside each name is the high school the girl attends or attended, and on what scholarship they aim to continue their education. Students graduate from the middle school, but Notre Dame keeps up with them.

A Protestant Approach

A few years ago, a man named Henry Tyson learned about Notre Dame's whiteboard. Now, a similar board occupies wall space in Tyson's school, St. Marcus Lutheran, where he is the principal. He explains the virtues of St. Marcus in a single piece of paper. It shows a photo of a girl, "Jade B.," who enrolled at St. Marcus as a fourth-grader. In the fifth grade, she was in the 55th percentile of students taking a national standardized test; by seventh grade, she was in the 93rd percentile.

The message is clear: St. Marcus can perform near miracles with children, plucking them from failing inner-city public schools and transforming them into academic stars. Founded in 1873, the school (with grades prekindergarten through eight) had fewer than 100 students during the 1990s. With the introduction of vouchers, the student population surged, more than doubling in size in 2001 to 220 students. Now it's up to 300 and maxed out, Tyson says. About 85 percent of students are using vouchers for tuition. The proportion of the student body that is black is about the same.

Walking into the building is like stepping into a different world. Outside is a tough neighborhood, with boarded up storefronts, and the occasional prostitute or drug dealer. Inside is security. Students wear blazers and either slacks or skirts. They don different neckties (both boys and girls) based on their academic achievement level, with those posting more than a 3.5 grade-point average earning coveted red and blue stripes.

Students get a lot of gospel and no room for misbehavior. Saying "no" to a grown-up is grounds for suspension. The day starts at 6:30 a.m. and ends at 5 p.m. in study hall. At St. Marcus, the pre-K kids — 4-year-olds — are reading first-grade-level books. Students sign a "covenant" that they will complete their homework; if broken they can be expelled. Teachers are on call 24/7. "It's a hard-nosed, high-discipline, high-expectations, lots of love, religion-based approach," Tyson says. "It's possible. You've just got to expect it and then have a curriculum that supports it."

Entry-level St. Marcus teachers get paid near the same as their Milwaukee public school counterparts — about $32,500 per year. But more experienced St. Marcus teachers trail their public counterparts. While a 20-year St. Marcus veteran teacher earns about $47,000, the average pay for a Milwaukee public school teacher is more than $50,000. Tyson says schools like St. Marcus are able to pay less because "monetary compensation is an afterthought for most of our teachers beyond the need to survive." Tyson, a former public school teacher himself, says he took a 20 percent pay cut to work at St. Marcus. "So what? I knew I would be doing what I love to do."

For their tax dollars, parents who might never have hoped to see their children even graduate from high school can get a highly disciplined program, the likes of which hardly exist in public schools but for which there is clearly demand in the inner city. Last fall, 400 parents lined up to get their kids into a lottery for admission to the school. About 300 were turned away because of lack of space.

By all accounts, Notre Dame Middle School and St. Marcus Lutheran are exceptional. But for

Another Choice: Charters

Just a couple of decades ago, charter schools didn't exist in this country. Minnesota passed the first charter school law in 1991, followed quickly by California. Today, 40 states, the District of Columbia, and Puerto Rico together have more than 1 million students who attend more than 3,500 charter schools, far outnumbering voucher programs in this country. In D.C., more than one-quarter of all public school students are enrolled in charter schools.

Charter schools differ from voucher programs in several important ways. They are public, for starters, and can't be religious in nature. But like private schools, they don't have to stick to some state and local regulations as well as contracts with teachers' unions. They get their charters, which typically last for three to five years, from some governing body — usually the local school board, but also states, cities, and schools of higher education. Charter school students usually take the same state and federal standardized tests as their public school counterparts. Funding depends on how many students enroll, and often (but not always) the funding follows students instead of remaining in the overall school district budget.

Helen Ladd, an economist at Duke University, has studied one of the nation's largest charter programs. North Carolina law allows up to 100 charter schools and this school year had 92, with about 27,000 students enrolled. The schools operate under the auspices of the State Board of Education.

According to Ladd, the results so far haven't been positive. Charter school students in her studies make smaller achievement gains than they would have in traditional public schools. She attributes much of this negative effect on high rates of student turnover. "In a choice system, an unintended side effect is greater mobility of students moving in and out of schools," Ladd says. "That's not particularly good for either the schools or the students." Additionally, given that charter schools enroll less than 2 percent of the total North Carolina student population, the opportunity for creating beneficial competitive effects is limited.

"Choice is something to be valued in its own right. It's empowerment," Ladd says. "But if we are going to use choice to empower parents, then I want those choices to be good choices."

Harvard University economist Caroline Hoxby disputes Ladd's findings (which are similar to findings done by other economists of other charter programs). Hoxby argues that random assignment models are the only way to measure achievement differences. Otherwise, Hoxby argues, the sample of students attending charter schools is biased by the likelihood that most of those attending were low-achieving to begin with. To get around that measurement problem, Hoxby focuses on oversubscribed charter schools where lotteries determine admission. The pool of enrollees is thus likely to be more random and a better comparison to the regular school attendees.

"Charter schools are inherently harder to analyze than school vouchers," Hoxby says. She is referring to the difficulty in finding places where there are enough charter schools to create competitive effects and for which there is enough demand that a researcher can get around the self-selection problem to draw random samples of students for comparison. "You have to do more work to make sure you're picking up the charter impact and not some time-related impact."

— Doug Campbell

every good school, Milwaukee's voucher program has a horror story counterpart. Perhaps the most infamous was Alex's Academics of Excellence, which at one point enrolled 175 students (but has since closed) despite the problems of the school's founder being a convicted rapist and allegations of employee drug use on campus.

Questions

Dueling anecdotes aside, there are a number of legitimate questions about the potential impact of opening school systems to market forces. There are questions of accountability — who will make sure schools are teaching students the fundamentals if they are not subject to mandatory testing? Then there is the problem that public schools — and the blameless students who attend them — could be made worse off if they lose significant funding to private schools. And there exists the potential that private schools could "skim" the best students from public schools, shutting out children with special needs or others who would lower the aggregate achievement level. Finally, why should public taxpayer funds support private, sometimes religious, schools?

All of these questions are being investigated by economists, and will be discussed below, save for the last. That one has been addressed by the Supreme Court in a 2002 ruling on Cleveland's publicly funded scholarship program. The court decided that using vouchers for religious schools was permissible because such programs allow parents to choose between religious and secular schools, meaning there was no bias either for or against religion.

This question also has an economic rejoinder: In a market system, distinctions between private and public, sectarian and nonsectarian, aren't all that important. If parents don't want their kids to go to religious schools, they can put them in nonreligious schools, which the market should produce given sufficient demand. Religious affiliation is just another choice.

To many economists, the important thing is making the choices available to everybody. Friedman argued that the "neighborhood effects" of education justified government sponsorship. That is, because society gains from an educated population, the government ought to finance a minimum level of schooling. But government intervention can stop right there, Friedman said, with no need for actual administration of schools. The "externality" he hoped to capture was an educated populace. Whether that population was educated in religious or nonreligious schools doesn't matter so long as a baseline education is acquired.

How these ideas play out in the real world, however, raises some valid questions about whether they really work.

Milwaukee's Case for Choice

The traditional system, the "choice" argument goes, isn't doing very well at providing this baseline education, despite some innovations. Student-to-teacher ratios have shrunk from 25.8 in 1960 to 16 in 2000; the median number of years of teacher experience is up from 11 to 15 during that time; and spending per pupil has grown threefold. But none of it has made a dent in student achievement, which during the past four decades has been flat, as measured by the performance of 17-year-olds on the National Assessment of Educational Progress. Meanwhile, school districts have consolidated and grown larger over the years, putting parents further away from monolithic decisionmaking. Yes, there is an abundance of fantastic public schools. But in poorer districts, in particular, public education is not meeting expectations.

In the 1980s, the situation in Milwaukee was dire. Less than half the students who entered high school in the district eventually enrolled as seniors. It took an improbable 1980s alliance between then-Gov. Tommy Thompson, a Republican, and Polly Williams, a Democrat who entered the state Legislature primarily on the platform of promoting school choice. (Williams is no longer active in the organized choice movement and did not respond to telephone messages requesting an interview for this story.)

With support from both the inner city and the suburbs, in 1990, the city launched the Milwaukee Parental Choice Program, providing up to 1,000 low-income students with vouchers to pay for private school. This initial group represented about 1 percent of total students in the district and was limited to those from low-income families.

Support from Milwaukee's business community was crucial to the program's growth. The concern was about the quality of the local work force: The public schools were producing an "army of illiterates," as one prominent chamber member put it. The Metropolitan Milwaukee Association of Commerce sunk $500,000 into a lobbying campaign, aiming to expand the voucher program. "[School choice] is not a panacea, but we are all of the opinion the program is necessary," says Tim Sheehy, chamber president, describing the organization's mindset in the mid-1990s. "We decided we weren't going to see this kind of change and educational opportunity without a system where parents are fundamentally customers."

Bolstered by the lobbying, the voucher program was expanded in 1995 to allow up to 15 percent of public school students to use vouchers, and to use them even at religious schools. Then in 2006, Gov. Jim Doyle signed a bill that raised the cap to 22,500 students, or about 25 percent of the district population.

There is still some room before the cap is reached. This past school year, 17,410 children used vouchers to attend one of 121 private schools. Vouchers pay $6,501, compared with a per-pupil cost of $12,000 for the Milwaukee public system. Of course, vouchers don't cover the full cost of education at many of the choice schools — such as at St. Marcus and Notre Dame — so private fund-raising at each school pays for the rest; parents don't have to pay another dime. This is a requirement of the program: that the vouchers fulfill all of a student's tuition obligations.

New voucher schools have driven about 40 percent of the overall growth in the program since 1999. Opening a voucher school in Milwaukee today mainly involves meeting some basic administrative requirements from the Department of Public Instruction. Though private, Milwaukee schools accepting voucher students must still follow state requirements for providing basic instruction in reading, language arts, math, social studies, and science. (Private schools don't have to participate in the voucher program if they don't want to, and they generally get to set the number of voucher students they will accept. For this reason, elite prep schools participating in the program tend to accept only a handful of voucher students each year.) Voucher schools must also provide evidence of financial stability, and schools entering the program must go through an accreditation process. But the regulations are limited compared to public schools.

Choice advocates think this relatively hands-off approach is one of the Milwaukee program's best features. Otherwise, they fear, private voucher schools might be saddled with regulations that could decrease their quality. "We have focused on financial viability as a means of solving the problems that we encountered with the program," says Susan Mitchell, president of School Choice Wisconsin, a nonprofit group set up to advocate the program. "We want to stay out of academic regulation."

Early Results

The data after five years of the program were quite limited, given the small size of the program. It's fair to question whether meaningful conclusions could be drawn from a program that involved about 1 percent of the district's student population.

The first study came in 1995 and was required by the law that established the voucher program. It was led by University of Wisconsin-Madison political scientist John Witte who found no significant difference in achievement between public school and voucher students. But a follow-up paper led by political scientists Jay Greene (then at the University of Houston) and Paul Peterson of Harvard University aimed to adjust for self-selection bias, with the idea that Witte's results were skewed by the likelihood that mainly low-achieving students would be applying for the program, thus all but ensuring that their performances would still trail those of public school students. They assumed that low-achieving students would be the main voucher applicants because satisfied parents wouldn't bother pulling their children out of public school.

Peterson and Greene compared voucher students to those who had applied for the program but were rejected and saw significant test score gains in reading and math. Finally, there was Princeton University economist Cecilia Rouse: She found voucher students posted faster gains in math scores, but none in reading.

So all in all, the first batch of studies reported a mixed bag, though more recently, one study found a sample of voucher students with twice the graduation rates of their public school counterparts.

Public School Impact

Understanding the impact of vouchers requires looking not only at private schools but also at public ones. The worry is that public schools will be hurt if their funding is drained with an exodus of voucher students to private schools.

In Milwaukee, no negative effect on public schools appears to have occurred. In fact, the upshot may be positive. The leading research on this topic has been performed by Harvard economist Caroline Hoxby who studied whether competition between public and private schools in Milwaukee improved public school student achievement and public school productivity overall.

Milwaukee circa the late 1990s made an excellent test case for several reasons, Hoxby says. First, it contained students who before choice were constrained to attend schools

Schools that rely on voucher students for the majority of their enrollment have sprouted up across Milwaukee since the inception of the city's pioneering program in 1990. Two of the most admired are Notre Dame Middle School (left), an all-girl campus whose famed whiteboard keeps tabs on all of its graduates; and St. Marcus Lutheran (right), which has seen enrollment triple over the past five years with its "tough love" approach to education.

PHOTOGRAPHY: DOUG CAMPBELL, ST. MARCUS LUTHERAN that "unconstrained" students — ones wealthy enough to live elsewhere or go to private school — avoided. These were the students who were most likely to be affected by the introduction of new options for schooling. In addition, Milwaukee residents since 1990 had heard a lot about school choice, but until 1998 — when the 1995 law raising the cap went into effect — most couldn't participate. The release of vouchers served as a sort of "shock" to the educational environment, allowing researchers to observe a supply response (how public schools would react).

Hoxby focused on two groups: Milwaukee public schools that were likely to face the most competition from voucher-infused private schools (by looking at public schools with the largest populations of voucher-eligible students); and Milwaukee public schools that were less likely to face stiff competition.

What she found was that the students in the former group of schools posted test scores that "improved quite dramatically over the first three years after school choice was unleashed." In other words, competition from voucher schools made public schools better, which is consistent with theory. (Hoxby's findings have not gone unchallenged; a 2004 paper by Princeton University economist Jesse Rothstein concluded that "a fair reading of the evidence does not support claims of a large or significant effect.")

"I am encouraged," Hoxby says about the results and their indication that school choice is working as theory predicts. "The reason is that where I really expected to see the results, I have seen the results ... I haven't expected to see results everywhere. If 1 percent of kids can leave for a charter school, I would be surprised that it would do anything."

How did these gains that Hoxby sees actually come about on the ground? Ken Johnson, who served as president of the Milwaukee Public Schools board of directors in 2005 and 2006, points to several changes, all of which he attributes to the leverage created by school choice. After 1999, the district switched to per-pupil funding, in which dollars followed students even within the public school system (which has open enrollment under Wisconsin law). Each school also was given the power to create its own governance council. These councils were primarily led by parents who have annual authority to review and sign off on their schools' budgets.

Then there was the innovation of site-based hiring, allowing principals to bring in teachers they wanted instead of having to accept applicants because of seniority. Site-based hiring ended the "annual dance of the lemons," in which teachers who had quietly been pushed out of one school demanded to be offered positions at others, even if the schools didn't want them. It was a "climate change" in how Milwaukee public schools operated, Johnson says.

> Understanding the impact of vouchers requires looking not only at private schools but also at public ones.

Johnson is not popular in the Milwaukee public school system. His unpopularity grew when he spoke last year in radio advertisements supporting the lift of the cap on vouchers. He is not running for re-election this year and vacates his seat in the spring. "If something is going on in school choice that increases school achievement, then we try to meet and beat that. There's nothing bad about that. If we can compete and close them [the voucher schools] down, great," Johnson says.

By contrast, a federally funded Washington, D.C., program is unlikely to have an impact on public schools because of its limited size, even supporters agree. Although many people refer to the Washington Scholarship Fund as a voucher program, it's strictly a federal grant program through which 1,800 low-income students (in a 60,000-student district) receive $7,500 to pay for private school.

Contrary Findings

The Public Policy Forum, a nonpartisan think tank in Milwaukee, has identified a few problems with the city's voucher program. Its analysis of the impact of school choice is more ambiguous than the sort usually cited by the pro-school choice crowd.

For one, the Public Policy Forum suggests that a chief beneficiary of the voucher system has been religious schools. Today, about 80 percent of voucher students are enrolled in religious schools, with the largest denominations being Catholic (37 percent) and Lutheran (17 percent). For the most part, these schools were struggling to attract students before vouchers provided a financial windfall, says Anneliese Dickman, research director at the Public Policy Forum.

And this windfall may not be having the beneficial competitive effect that choice advocates seek. After all, it's possible that students attending religious schools — with their emphasis on discipline and faith — would never go to public schools in the first place. So how does that create competition?

Consider that in the 2006 school year, after the 15,000-student cap was lifted, the voucher program grew by 2,516 new pupils. But private school enrollment grew by just 620 students, and that 60 percent of new voucher users weren't new to private schools. "The availability of more vouchers didn't result in a ton of kids coming into the religious schools who weren't there before," Dickman says.

Milwaukee's Experiment with School Vouchers

■ **Name of Program**
Milwaukee Parental Choice Program

■ **Year Introduced**
1990

■ **Voucher**
For 2006-2007 academic year, $6,501 per student

■ **Eligibility**
Students living in the Milwaukee public school district who currently attend either public or private schools, with family incomes below 175 percent of the poverty level (currently roughly $35,500 for a family of four)

■ **Cap**
22,500 students, about 25 percent of students living in the Milwaukee public school district

SOURCE: Milwaukee Department of Public Instruction

Accountability is another concern. The theory in school-choice programs is that accountability largely is supposed to be taken care of with student mobility. If parents don't like the results, they can move their child to another school.

Yet evidence from Milwaukee makes a pretty good case that this sort of accountability may not be sufficient. There is an information gap. For example: In Milwaukee's voucher schools, turnover is a big problem, Dickman says, with the annual rate of students dropping out of the voucher program at 25 percent — even as voucher school enrollment has increased. This presents a problem to parents trying to choose the best schools for their kids. "The parents don't know that half the class isn't coming back the following year," he says.

But for the most part, Dickman says, "bad" schools — such as the rapist-founded Alex's Academics — were filled with kids just before they closed. How can parents properly decide where to send their kids if they don't have comparable achievement data from both public and voucher schools? "This is not to blame the parents, but they just don't have all the information they need, so to put the entire responsibility of accountability on them just isn't fair," he says.

"Skimming," however, doesn't seem to be a significant problem. In Milwaukee, the program is designed to prevent schools from turning away low-achieving students. Private schools have to accept all voucher students for which they have slots, and then choose by lottery once they fill. Also, the voucher pays the full price of tuition, even if the actual cost of enrollment is higher. "Parents are choosing vouchers because they are very unhappy about where their child was before. And perhaps if they're unhappy it's because they weren't doing well," Dickman says. "My guess is creaming [skimming] is not happening, but we don't know for sure."

The Wrong Market?

At the center of almost any discussion about vouchers in Milwaukee — or anywhere else for that matter — is the teachers' union. Certainly no group is more aggrieved by the choice program.

The Milwaukee Teachers' Education Association's list of problems with voucher schools is lengthy. Among the main concerns: Public school teachers must go through licensing that private school teachers don't. Parents choose private schools not for educational purposes but for discipline or religion (which isn't necessarily what society hopes to gain from funding schools). Private schools don't tend to enroll students with special needs, who are more expensive to educate. (By the union's count, voucher schools now take fewer than 500 students with special needs, compared with about 15,000 in the public schools.)

"The idea of applying market forces to education is a bad idea to me," says Dennis Oulahan, president of the Milwaukee teachers' union. "To me, education is not a commodity, it's a right. And when you apply market forces to it, we say there will be winners and losers. We can't afford to have any losers when talking about educating our children."

Of course, another obvious reason for the teachers' union to oppose vouchers is that they threaten job security as well as salaries. Nationwide, public school salaries are about 60 percent higher than those offered in private schools. Competition between those schools should put pressure on the higher public school salaries. For voucher advocates, this is precisely the point.

Eric Hanushek, an economist at Stanford University's Hoover Institution, says that the key to good schools is good teachers, more so than other factors. But trying to get good teachers by requiring extra licensing and regulation doesn't seem to be working. The data show that high teacher quality is important in fostering student achievement, but that teacher quality is uncorrelated with certification and even experience. What's needed, Hanushek says, is a competitive system in which schools essentially bid for the services of good teachers. In time, this system could boost teacher pay, in addition to making schools better.

Teachers' unions "don't want competition, any more than Ford Motors wants competition," Hanushek says. "The puzzle to me is why particularly the minority community and disadvantaged populations in large urban areas are willing to put up with the regular public schools and not demand more choice."

A Definitive Study?

Is it too optimistic to hope that a consensus — either in favor of or opposed to market-based education systems — among economists could break the stalemate? There will soon be a study that aims to provide all the data which a parent, teacher, policy wonk, or academic could want. As part of the legislation to lift Milwaukee's voucher cap, a team of researchers was commissioned to conduct a five-year evaluation of the program. It is the first to attempt an achievement comparison of voucher and public school (including charter) students since 1995.

"We're really open to any and all possibilities, trying to go in without any strong priors, just in a spirit of explanation," says University of Arkansas economist Patrick Wolf, who is heading the five-year investigation along with fellow researchers Jay Greene at the University of Arkansas and John Witte at the University of Wisconsin-Madison. "It's almost like this great wilderness was discovered a decade ago and nobody rediscovered it."

So the results from this study should settle matters, right? Probably not. Already, the teachers' union has labeled the research team as biased in favor of choice, and indeed some of the research team's past findings on choice programs have largely been positive. Oulahan also questioned whether the testing — which is different than that issued to public school students — will accurately reflect the groups' relative achievement levels.

Even Hoxby, the economist whose research is most cited by advocates of school choice, is pessimistic. She says it will take a clean, big natural experiment to truly answer all the questions. Milwaukee no longer resembles such an experiment, as the "shock" of having choice available is no longer there. A better study might be one that soon looks at results in Utah, which is now embarking on a statewide voucher program.

"We tend to get messy experiments in the United States. That's the way politics is," Hoxby says. "The result is that we have to work especially hard with economics to try to understand and get the information out of these somewhat messy experiments."

Studies come and go. Howard Fuller, a Milwaukee native who in the early 1990s served as the district's superintendent, has been involved with school choice from the beginning. Fuller has read all the studies and surveys. He knows they are messy. He believes school choice in Milwaukee requires some tweaking. But to him, what matters most is the principle involved: choice.

"It has given parents who would not otherwise have one, an option," says Fuller, who now serves as an education professor at Marquette University. "It's not an issue of whether it's superior to the traditional system or not. The issue is — did you give low-income and working-class blacks some opportunity to choose? That's the issue."

Economic theory says that choice should increase customer satisfaction. In a recent poll, 80 percent of Milwaukee parents using school vouchers described themselves as satisfied or very satisfied with the program. For many in the nation's largest laboratory for school choice, no further studies are necessary. **RF**

PHOTOGRAPHY: ST. MARCUS LUTHERAN

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Ask the MARKET

Companies are leading the way in the use of prediction markets. The public sector may soon follow

BY VANESSA SUMO

Every week, the Centers for Disease Control and Prevention (CDC) produces a five-color map, each color representing the gravity of the flu in each state, from yellow (no activity) to red (widespread activity). It's useful so far as it goes, but the information is often a week old.

There might be a way to gather timelier information. Say that a nurse in a public health clinic in North Carolina usually sees about one or two patients come in each day with flulike symptoms in the month of December. But one day that number goes up to four, and then to five the following day. Sensing that the flu was quietly spreading, the nurse places a bet that the CDC will upgrade the state's flu alert from green (sporadic activity) to purple (local activity) or even to blue (regional activity). A doctor, a lab technician, a pharmacist, a nursing student, and other traders in the flu prediction market likewise throw in their hunches, based on their own observations. Together, they come up with their best prediction of how widespread the flu will be in the coming weeks.

The University of Iowa has been running such a flu prediction market for the state of Iowa for the past four years. During the October 2006 to April 2007 flu season, it added a new market for North Carolina because of strong interest from state epidemiologists.

Here is how it works. Each participant is given 100 "flu dollars" with which to trade. This amount is equivalent to a real money educational grant of $100, which grows or shrinks during the season depending on the accuracy of their predictions. Participants buy and sell five color-coded shares, or contracts, each one corresponding to a level of flu activity based on the CDC's surveillance system.

For instance, if the price of a red contract that expires in two weeks is 80 flu cents, then the market's collective guess is that there is an 80 percent probability that the flu will be widespread in a couple of weeks. If many traders believe likewise, then they will buy more red contracts, hence bidding up its price. Thus, the market price of each contract indicates the likelihood that the spread of the seasonal bug will reach a certain level in a particular week. If the CDC eventually reports a "red week," then those holding on to red contracts will be rewarded one flu dollar. Contracts of losing bets expire worthless. Participants get a check at the end of the season depending on how well they did.

Predictions from the Iowa flu market (where there are more data to analyze) have been remarkably accurate. About half of the time, it has been able to correctly predict the extent of flu activity one to two weeks in advance, according to a study by the managers of the flu prediction market. The record is even better if allowed some wiggle room. "Doctors say we don't have to be exactly right, they just want to know, for instance, that [the prediction] is green rather than red, and we're [correct] there 90 percent of the time," says George Neumann, an economist at the University of Iowa and one of the market's managers.

The value of such a prediction market is that one can often get a very good idea of how severe the flu season will be, even up to five weeks in advance. That's enough time for health care workers to spring into action — to mobilize resources toward vaccinating high-risk individuals and to prepare hospitals to anticipate more patients.

The principle behind prediction markets is simple. By designing contracts for which payoffs depend on some

PHOTOGRAPHY: GETTY IMAGES

unknown future event, markets can offer incentives for people to reveal what they know, and then pool this information to produce the best forecast. Prediction markets provide an effective way to bring together what writer James Surowiecki calls the "wisdom of crowds." His book (which bears the same title) is a treatise on how the collective intelligence of people is often better at predicting the future, and, therefore, at making better decisions, than calling on a few experts. This claim has been shown to be true in many domains. In the case of flu prediction markets, epidemiologists are happy to tap into the wisdom of anyone from doctors to nursing students.

Political and media uproar a few years ago about a Department of Defense-funded project has somewhat frozen interest in using these markets for public policy. One of two appointed projects, the Policy Analysis Market (PAM), was accused of being a market for predicting when the next terrorist attack would occur, something that was thought to be offensive and morally wrong. PAM was promptly shut down even before it was launched.

In fact, PAM was a market that would have allowed traders to speculate, for instance, on how the country's financial aid and military involvement would affect economic and political stability in the Middle East, and how conditions in those countries could affect the United States. "It wasn't a market about terrorist attacks," says Robin Hanson, an economist at George Mason University and one of the architects of PAM. But it might have demonstrated how well these markets can make forecasts in comparison with other means of gathering intelligence.

With the demise of PAM, public policymakers may have become hesitant to adopt prediction markets. "The government got shy," says Hanson. Instead, companies are leading the way, turning to the power of these markets to peer into the future to help them make better decisions.

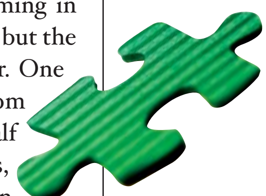
The Market as a Crystal Ball

Prediction markets have been used to forecast election and sports outcomes, the weather, Oscar winners, future technologies, the direction of the fed funds rate, and almost any event that people care about. It is tempting to look at these markets as just a fancy form of gambling or an entertaining pastime. But as a new book on information markets (another name for prediction markets) by the AEI-Brookings Joint Center for Regulatory Studies notes, these markets are beginning to acquire some respect. They seem to deliver forecasts that are as good as or even better than other well-known prediction mechanisms.

For instance, the Iowa Electronic Markets (IEM), a prediction market institution at the University of Iowa for almost two decades, has consistently done a better job at calling the winners of presidential elections than opinion polls. One of the contracts offered at the IEM allows traders to bet on a candidate's share of the total votes, which makes it easy to compare the market's prediction to the actual vote share won by each nominee. These contracts pay off a penny for each vote share earned by a candidate. For instance, if the democratic nominee gets 40 percent of all democratic and republican votes, then that contract pays 40 cents. The markets are open to all traders, except for some "classroom markets" that are limited to academic traders.

Joyce Berg and Thomas Rietz, both of the University of Iowa, have studied the performance of the IEM so far. They find that on the eve of the election, the predicted presidential vote shares missed the actual vote shares by 1.33 percent. This is smaller than the average error of 2 percent for opinion polls (for elections prior to 2004). Moreover, Berg and Rietz find that IEM prices for the 2004 presidential elections were "more stable than polls, respond less to transient events than polls, and were closer to election outcomes than the average poll when the election was more than one week away."

The IEM is probably the best place to search for proof on the forecasting ability of these markets because it has been around for a long time. The evidence is still coming in from other corners of the field, but the results look encouraging so far. One piece of evidence comes from data for the first two and a half years of Economics Derivatives, a prediction market that bets on the future path of economic variables like nonfarm payrolls and retail sales. A recent analysis by Refet Gürkaynak of Bilkent University in Turkey and Justin Wolfers of the University of Pennsylvania shows that market-based forecasts "mildly dominate" the consensus forecasts of professional economists working in financial markets.



The power of prediction markets to successfully aggregate and summarize information relies a great deal on giving participants monetary incentives to truthfully reveal their beliefs, in making people "put their money where their mouth is." This reward entices people to come forward and trade, to toss their bets and information in the ring. The more confident a trader is in his beliefs, the bigger his bet, thus giving more weight to what he knows. Because he will be rewarded for being correct, a trader will have the incentive to constantly watch the markets and to jump on any opportunity when prices fall out of line with their predictions. He will also be motivated to continually seek information to improve upon his bets and therefore the market's forecasts.

The Fed, for instance, can look at various surveys of inflation expectations, something that it is keen on following because it directly affects its decision on where the fed funds rate, its monetary policy instrument, will go. However, as a San Francisco Fed *Economic Letter* points out, "survey estimates suffer a bit from the 'talk is cheap' problem." A better way is to look at what the market thinks the future course of inflation will be.

One indicator is the difference between the rate of return on conventional bonds and the rate of return on inflation-indexed bonds: a measure of the public's expectations of inflation. The prices of these financial instruments will always represent the market's best forecast. There is every incentive not to lie because there is money at stake. Consequently, the difference in yields between these two instruments has been shown to be better predictors of inflation than survey-based estimates.

But does money always matter in prediction markets? This question is especially important in the United States where gambling is mostly illegal, which makes it difficult to set up a prediction market that involves real money. The prediction market puzzle is that even markets trading in pretend dollars can make very accurate predictions, which seems to undermine the profit motive that makes these markets work so well.

For instance, the Hollywood Stock Exchange, a play money site, has been shown to have a very good record of predicting Oscar winners and box-office successes. Even when the stakes are limited such as at the IEM, which trades with real money but has an investment limit of $500, accuracy has not suffered. (The IEM can legally operate with real money because it has been given a "no action" letter from the Commodity Futures Trading Commission, on condition that it does business in a way that it has indicated to the commission, including accepting an investment no greater than $500 for each participant.)

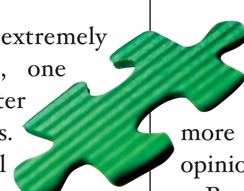
Why do play money prediction markets do as well? In real money markets, the quality of the information or the skill of the trader is reflected in the amount he is willing to bet. However, the amount he is willing to put down can be determined in part by the depth of his pocket. In a play money world, however, one can make large bets only after amassing a fortune of play money, which in turn is only possible by making a series of good trades. This feature may help make up for any accuracy that could be lost by not trading with real money.

And there are other reasons that could motivate people to trade on the information that they have. In companies that run internal prediction markets, for instance, managers would probably never ask employees to put up their own money. "What we come to think of as real money is when [employees] pay out of their own pocket to participate. And inside the company, that usually doesn't happen," says Emile Servan-Schreiber, CEO and co-founder of Baltimore, Md.-based NewsFutures, a firm that sets up internal prediction markets for companies.

While businesses sometimes provide some small monetary rewards like cash or gift certificates, reputation or recognition within the group could be a stronger incentive. "Your performance in the market is going to reflect well upon you in the minds of the higher-ups, which is probably more important than the material reward," say Servan-Schreiber. Another factor is how much the employee cares about the event to be predicted in the market. (For instance, will product X be launched on time?) "If you care about the question because it's part of your job and you think you know a lot about it, then that will be its own reward," Servan-Schreiber says.

Markets vs. Meetings

A good forecast is extremely valuable for companies, one that translates into better decisions and higher profits. Google is running internal prediction markets to predict product release dates. Arcelor Mittal, the largest steelmaker in the world, has one to forecast sales and the price of steel. The pharmaceuticals industry has also been keen on prediction markets because choosing a new drug to place its money on can be very risky. "The problem of a pharmaceutical company is that it has many ideas that it could bet on, but it needs to bet on the right one early on, otherwise it could be wasting billions of dollars on the wrong course," Servan-Schreiber says.



In companies, just like in any organization, there is a lot of information that managers may find helpful, and the challenge lies in how to bring the pieces of the puzzle together. Of course, probably the oldest and the most widely used method, the staff meeting, is one way to get everyone in the same room and exchange what they know, says Wolfers, but this is probably not the best way to extract what employees really believe.

Someone who is only interested in pleasing his boss might say what he believes the boss wants to hear, in which case his information is useless and even distracting. Nobody wants to be the bearer of bad news, so someone who might think that a project will not be launched on time will hold back saying so. And then there is the insufferable employee who will say his opinion about everything but in fact knows nothing. And in the corner at the back of the room there may be someone who is uncomfortable about speaking up but really knows a lot.

In this type of situation, the information that is laid out in front of the manager will be erroneously weighed according to who has the loudest voice or who wants to curry the most favor with the boss, which is surely not the best way to aggregate information. Prediction markets offer a better way by giving employees equal opportunity to place bets on their beliefs and have what they know count more according to how strong their opinions are.

But who gets to participate in the company's internal prediction market? Should it be limited to the smartest guys in the room? The problem is that companies often do not know who the smart guys are; if they did, then they would just go up to them and ask. Prediction markets make it possible for experts to step forward and reveal themselves. "We may be surprised that the guys from the loading dock are actually the ones who know how many orders went out that week," says Wolfers. "So I wouldn't want to exclude the loading guy ever, because he may be smart, and he's the only one who knows that."

But what happens if those who think they are experts but really are not likewise come forward? This actually makes it even more appealing for the smart guys to trade. "You can think about uniformed money as sort of the honey that attracts the bees," says Wolfers. "It's the reward for intelligence and good trading."

Similarly, manipulators, or those who would lose trades intentionally to move prices in their favor, can also be thought of as "noise" traders. For instance, if a company rewards resources to a division based on what prediction markets say, then employees may be tempted to try to manipulate prices. However, it is the nature of markets to offer rewards to those who spot these "noises" early on.

A Not-So-Scary Proposition

Besides manipulation, there are other circumstances when prediction markets might fail to yield the right forecast. Markets may be biased toward "favorites" and "long shots," or the tendency to undervalue near certainties and overvalue small probabilities. Prediction "bubbles" may also be possible if investors irrationally inflate the probabilities of certain outcomes. These anomalies are not different from those observed in financial markets. Also, if the quality of available information is very poor, then the prediction will simply reflect the market's collective ignorance.

But no system of forecasting is error free, and so the relevant question is how the errors of this mechanism compare to the errors of other forecasting mechanisms. So far, prediction markets have done at least as well as the alternatives.

Even so, prediction markets are not meant to prematurely replace other methods of forecasting and gathering information, if at all, but can initially take on an advisory role. "We don't have to put the market directly in charge, [but] you would slowly rely on it as you came to trust its judgment more," says Hanson. Hence, it is important to continue to compare the accuracy of prediction markets with alternative institutions. That may assuage some fears of handing over an organization's decisionmaking capabilities entirely to the market, especially in the arena of public policy.

And there are many uses for public policy. Just like company managers, the problem a policymaker faces is how to find those who will truthfully reveal their beliefs about a certain policy and how to best aggregate and weigh those beliefs. One clever way is to design a set of contracts that can be traded in prediction markets to allow policymakers to compare the outcome of competing policies, or what Hanson calls "decision markets." For instance, decision markets can be used to compare murder rates with and without capital punishment, children's test scores with and without school choice, road congestion with and without the expansion of a highway, and a host of other public-choice questions.

Will governments ever use prediction markets in this way? Perhaps, but not soon. "Many useful institutions took a long time to become adopted," says Hanson. Life insurance is one such institution, which took awhile to become accepted because people thought that life insurance was like gambling on death, and that put people off. The unlawful Internet gambling law that was passed last year may also inadvertently affect prediction markets from flourishing, insofar as these markets are seen as gambling.

In the business world, interest in prediction markets is growing fast even if the acceptance is a little slower, mostly because it takes awhile to see results. But Servan-Schreiber is optimistic about their place in corporate circles. "Prediction markets are going to become a fixture of management in the 21st century. That's pretty sure," he says. "[Prediction markets] work and there's a demand out there for the wisdom of crowds." **RF**

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GRINDING GEARS

The jobs bank program has provided greater job security for unionized workers at the Big Three automakers, but at the expense of greater flexibility in labor markets

BY CHARLES GERENA

You have probably seen this scene played out before in the news: Laid-off workers, forlorn, leave their shift at a manufacturing plant for the last time. The meaningful relationships and lengthy careers they had built up are gone, and the workers know it.

That was the scene at General Motors' assembly plant in Baltimore, Md., on May 13, 2005. The 70-year-old facility rolled out its last vehicle, a van tagged with a cardboard sign reading "The End." It was a difficult day for the 1,400 plant workers facing an uncertain future.

Displaced workers often suffer long periods of unemployment. When they finally get another job, it is more likely lower-paying and part-time. Even those who land full-time jobs are less likely to match their previous salaries, especially when they enter a different line of work. That's bad news for people in industries such as automobile manufacturing who have permanently lost positions due to automation and the competitive pressures of a global economy.

Blunting the impact of layoffs is one of the reasons why a "jobs bank" for displaced autoworkers was created in the early 1980s. The program was the result of contract negotiations between the United Automobile, Aerospace, and Agricultural Implement Workers of America (UAW) and the "Big Three" — Ford Motor Company, General Motors, and the Chrysler Group. In the jobs bank program, laid-off autoworkers typically receive all or at least a large share of their usual wages and benefits indefinitely. Eventually, the idea was, these idled workers would be plugged into new jobs when they became available.

Automakers expected to avoid extensive job cuts and plant closings in the future, so they figured the number of people in the jobs bank wouldn't be overwhelming. They also believed that most employees would be there for only a short stay. Unionized workers, in turn, were willing to accept pay freezes and other concessions in exchange for greater job security.

"We had to look at ways of protecting people, even if we were going to do some givebacks," says Fred Swanner, president of UAW Local 239 based in Baltimore. His union represents the 100 people who remain in the jobs bank two years after General Motors closed its assembly plant in the city. "It was a way of protecting the employees and keeping the corporations from outsourcing [work] overseas, or at least try to slow them down by attaching some liabilities to it."

The program appears to have given autoworkers what they wanted. Swanner says his members appreciated the added stability in their employment and have used their stretch in the jobs bank to volunteer or go back to school.

PHOTOGRAPHY: GM CORP

But the Big Three automakers have paid a heavy price with the jobs bank program. Although they have been able to shed workers through attrition, automakers have laid off more people than expected. This has forced the companies to pay millions of dollars to idle their employees, as well as to offer increasingly large buyouts to persuade jobs bank participants and other workers to leave.

Since 2005, vehicle and parts producers have announced more than 280,000 layoffs, according to surveys by employment consultant Challenger, Gray & Christmas. Against this backdrop, everything is up for renegotiation during this summer's UAW contract talks, including the jobs bank.

Great Expectations

When it was created under the 1984-1987 UAW contract, the jobs bank covered workers who lost their jobs as a result of technological change, outsourcing, corporate reorganization, or productivity improvements. It was expanded in the 1990-1993 contract to include workers who were laid off due to declining sales.

Under the contract that expires this September, laid-off autoworkers receive supplementary unemployment benefits on top of their state benefits for 48 weeks. Then they enter a jobs bank designated for each automaker. Depending on the specifics of the union contract at a plant, jobs bank participants can sometimes continue to receive up to 100 percent of their salary and benefits until they leave the company, accept another position at their plant, or transfer to a different facility within a 50-mile radius.

What happens in the meantime? It varies from plant to plant. Sometimes, workers are allowed to use their downtime to take classes or volunteer in the community. Or they may be asked to help the company in another capacity, such as delivering vehicles at dealerships or covering for other workers who are receiving training.

In a few cases, there isn't anything productive for the jobs bank inhabitants to do. When General Motors closed its Baltimore plant in May 2005 and displaced 1,400 workers, the union hall near the plant was reportedly a popular hangout for banked workers waiting for odd jobs.

Being stuck in a jobs bank may not seem attractive to someone accustomed to punching a clock at a factory every day. But in the early 1980s, UAW officials wanted some degree of job security for their members after several years of mass layoffs. A sluggish economy and a surge in imports had prompted automakers to shed close to 300,000 positions, or one-third of their work force, between 1979 and 1982.

Besides, the UAW figured the jobs bank would discourage companies from cutting jobs and speed the reassignment of those who were laid off. Companies weren't expected to pay people *not* to build vehicles for an extended period of time. In fact, that is exactly what the Big Three have done, slowing down assembly lines, eliminating shifts, and, eventually, closing plants despite the additional expense of putting workers in the jobs bank.

Laurie Harbour-Felax, a manufacturing consultant and president of Harbour-Felax Group, says there have been dramatic improvements in productivity in the last few decades and a greater focus on quality, which drives higher efficiency. The result: less labor required to produce the same number of cars. "As people are retiring, automakers are hiring back fewer people," she adds.

Labor demand has been eroded by overseas competition as well. Asian automakers like Toyota, Hyundai, and Nissan have lured consumers away from the Big Three, reducing the latter's share of the domestic market. They also operate American plants, taking up some of the labor slack they helped create, but not all of it. "Throughout the 1980s and 1990s, the Japanese would put in a plant to make the same volume as a Big Three plant, but do it with dramatically fewer people," Harbour-Felax says.

This pushed U.S. automakers to be even more productive and reduce their labor needs. "The globalization that has gone on in the last 25 years has put tremendous pressure on this country," she notes.

The Big Three automakers didn't envision this situation, either. "The thing we didn't plan for was the loss of market share and the need to close plants," says Dan Flores, General Motor's spokesman for manufacturing and labor. "There weren't jobs that people could go to."

When they renewed their UAW contracts in the early 1980s, the Big Three automakers were optimistic that their long-run growth since World War II would continue — their combined profits had jumped from $6.3 billion in 1983 to $9.8 billion in 1984. "We thought that [the jobs bank] would be a temporary bullpen, where employees would go before they were assigned to a different job or plant," Flores says.

Automakers were also willing to create the jobs bank in exchange for union concessions on the use of automation and flexible scheduling. Lastly, the added level of job security was supposed to improve productivity by enhancing workers' motivation and commitment.

Improving the worker-employer relationship was expected to have one more benefit, adds Cornell University economist Harry Katz. "[Automakers] hoped workers would be more willing to move around the system and live with plant closings, line adjustments, work-rule changes ... and other things they were doing in exchange for longer-term security," he notes.

Katz says it's hard to tell whether the creation of the jobs bank contributed to productivity improvements in the automotive industry. It hasn't led to substantially greater flexibility, in his opinion.

What the program has done is add to the ranks of the underemployed. Chrysler had 2,000 people in its jobs bank at the end of 2006. (As of press time, the private equity firm Cerberus Capital Management LP had agreed to buy 80.1 percent of the Chrysler Group from DaimlerChrysler AG.) Ford and its former parts subsidiary, Visteon, had a combined total of 1,100 jobs bank participants. Published estimates for General Motors and Delphi, a parts supplier spun off from GM, indicate that they have the largest jobs banks — a combined 11,100 people as of March 2006. In total, more than 14,000 autoworkers have been laid off but are still on company payrolls. The number is expected to drop in 2007 as workers finally accept severance and retirement packages.

Stuck in Neutral

Automakers have waved numerous enticements in front of idled workers to prompt their departure. In 2006, General Motors offered $140,000 buyouts to workers with 10 years of seniority, including those in the jobs bank. Ford also offered buyouts of up to $140,000 last year, as well as annual tuition assistance of $15,000. In March 2007, Chrysler started offering early retirement payouts of $70,000 and lump-sum buyouts of $100,000 to help reduce its North American headcount.

Many people in the jobs bank seize the opportunity to move on with their lives. About 600 of the 1,400 people let go from General Motors' Baltimore facility in 2005 have retired or accepted buyouts, according to the UAW's Fred Swanner. About 700 people accepted transfers to other GM facilities, including a transmission plant in Baltimore County and an assembly plant in Wilmington, Del. That leaves about 100 workers in the jobs bank by Swanner's calculations.

The workers who accept buyouts or transfers are usually the ones who are the most mobile. They are willing and able to start anew, whether it's at a plant in a different city or in an entirely different career. This includes younger people with lots of healthy, productive years ahead of them, as well as older, experienced workers who are confident in their marketability.

Then there are the workers who don't move on. One group of General Motors' employees reportedly stayed in the jobs bank 12 years after their plant in Van Nuys, Calif., closed in 1992. Some Delphi workers in Flint, Mich., have been idling for more than six years.

Based on his experience, Swanner says the people who stay the longest in the jobs bank aren't usually production workers who stamp out or assemble parts. Rather, they are the millwrights who fix conveyors, the electricians who maintain assembly line robots, and other skilled trades workers. "We're down to our trades guys, who are hard to place. Those openings only occur in some factories one or two at a time," Swanner notes.

There are other reasons why people choose to remain in the jobs bank. Workers close to retirement may be willing to stay in limbo for a few more years until they can collect their pension and health-care benefits. Others may cling to the hope that automakers will regain their market share and ask them to return — several people at General Motors' Baltimore plant told the *Baltimore Sun* last year they didn't want to accept buyout offers and give up a chance to work at GM's transmission plant in Baltimore County.

Similarly, some workers may be holding out for a buyout that is worth giving up their current salary and benefits. In general, the comparatively high compensation of autoworkers — even within the manufacturing sector — makes staying put in the jobs bank a better choice, even if it only delays dealing with the harsh realities that lie beyond the automotive industry.

For one thing, the jobs bank sets a high bar for a worker's reservation wage, the minimum salary for which people are willing to supply their labor. Economists believe that a person's reservation wage depends on the probability of getting a job offer, the expected range of wages available in the market, and the availability of alternative income sources, such as state unemployment benefits and personal savings. So, the higher the alternative income — in this case, the salary that laid-off workers in the jobs bank continue to receive — the higher the reservation wage, all other things being equal.

Also, autoworkers may not get the same wages and benefits if they transfer to another plant. The labor market has undergone a significant shift from unionized positions at American firms in the "Rust Belt" to positions at foreign producers with plants in lower-cost, "right-to-work" Southern states where unionization is less common.

For example, BMW Manufacturing has been hiring people at its plant in Spartanburg County, S.C. But the nonunionized facility needs only temporary workers and pays $12 to $13 an hour compared to the industry average of $22 an hour.

Finally, laid-off workers may feel less secure about their employability and be afraid to take chances and switch careers. "We get some who will be in that mode. Their self-esteem is lower," Swanner notes. "They might not feel they can make another career change at the age they are now." Or they might feel that they lack the necessary skills to handle today's technology.

The Details

The size of the Big Three automakers' jobs bank program is expected to decline in 2007. It will depend on how many laid-off workers accept buyout packages or choose to retire. Here is a snapshot of where the program stood at the end of 2006.

Chrysler Group
Jobs Bank Name: Job and Income Security
Funding Committed Under UAW Contract: $451 million
Estimated No. of Participants: 2,000 (2,100 in 2005)

Ford Motor Company
Jobs Bank Name: Protected Employee Program (PEP)
Funding Committed Under UAW Contract: $944 million
Estimated No. of Participants: 1,100 (1,275 in 2005; includes PEP workers at former parts subsidiary Visteon)

General Motors Corp.
Jobs Bank Name: Job Opportunity Bank-Security (JOBS)
Funding Committed Under UAW Contract: $2.7 billion
Estimated No. of Participants: 11,100 (9,000 in 2005; includes JOBS workers at former parts subsidiary Delphi)

SOURCES: Company estimates, news reports, and UAW Web site

— Charles Gerena

Buyout Blitz

Automakers looking to downsize have been working hard to persuade their workers to voluntarily leave their jobs. Unionized workers have required more encouragement, especially those in the jobs bank programs at Ford, GM, and Chrysler.

	Date of Buyout Offer	Scope of Buyout Offer	Lump Sum Payments Offered
■ Chrysler Group	Mar 2007	11 plants nationwide	• $100,000 + six months of benefits for workers with at least one year of seniority • $70,000 + full benefits for workers eligible for early retirement
■ Ford Motor Company	Sep 2006	All active employees	• $140,000 for any worker with 30 yrs. service or age 55 with 10 yrs. of service; future benefits forfeited • $100,000 + six months of benefits for workers eligible for retirement
■ General Motors Corp.	Mar 2006	All active employees	• $140,000 for workers with 10 yrs. of service or more; future benefits forfeited • $70,000 for workers with less than 10 yrs. of service; future benefits forfeited • $35,000 for normal or early retirements retroactive to 10/1/05; future benefits retained
■ Mitsubishi Motors North America	Jul 2006	Plant in Normal, Ill.	• $85,000 + 3 months of benefits
■ Nissan North America	Feb 2007	Plants in Decherd and Smyrna, Tenn.	• $45,000 + $500/year of service

SOURCE: News reports and press releases

■ Unionized / ■ Nonunionized

Automakers provide educational programs for laid-off workers to learn new skills. However, the type of training varies from plant to plant — one General Motors' facility in Flint reportedly offered classes on working in a casino, while a Ford plant in Wayne, Mich., taught classes in bicycle repair and silk flower arranging. The career paths that workers are being prepared for may not be as financially rewarding as staying in the automotive industry or in manufacturing.

When 2,300 workers stop making F-150 trucks at Ford's Norfolk, Va., plant this year, few alternatives will be available for those who decide to enter a jobs bank. "There is nothing around here," says Chris Kimmons, president of the plant's union. They could join the International Longshoreman's Association and make $16 an hour at a wharf, but that compares poorly to the $28 an hour they make now. "You do the best you can for your family and yourself."

The Price of Layoffs

Laid-off workers are likely feeling the pressure to get out of the jobs bank, with the UAW's contracts with the Big Three expiring in September. Apparently, most of the workers at Ford's truck assembly plant in Norfolk don't want to take any chances when the facility shuts down. About 1,900 workers have accepted one of the severance packages that Ford offered to workers in 2006. Another 360 will transfer to the company's truck plant in Dearborn, Mich. Kimmons estimates that fewer than 50 workers will enter the jobs bank after receiving 48 weeks of unemployment benefits.

"They wanted to take the money and run," Kimmons says. "Maybe they feel the auto industry isn't as sound as it used to be. There is a lot of devastation going on."

While the UAW will likely resist any changes to the jobs bank, automakers have good reasons to push for a compromise. With $4.1 billion committed to funding the jobs bank under the current UAW contract, the program adds another burden to the long list of challenges facing automakers, from rising health-care costs to designing vehicles that can compete with imports on quality and customer satisfaction.

As consumer tastes change and demand fluctuates, automakers constantly reevaluate their production levels and employment needs. According to GM spokesman Dan Flores, there has been room for the company to make short-term tweaks, such as eliminating a shift at a plant producing an unpopular model.

Flores admits that the jobs bank did raise the cost of long-term layoffs enough that it has affected GM's production plans. But he downplays its impact on GM's decisionmaking process, saying it is just one of many considerations. "Certainly, there is a significant cost associated with [the jobs bank]," he notes. However, "there are a lot of factors that come into play."

In an October 2006 report, the Harbour-Felax Group calculated the price tag for permanently closing a typical assembly plant that produces 1,000 vehicles a day. Its analysis assumed a total of 4,450 workers — both at the plant and in related component, engine, and transmission plants — would end up in a jobs bank for one year.

The bottom line: Chrysler would have to devote $175 of every vehicle it sells in North America to pay for the plant closing, while Ford would have to cough up $134 per vehicle and GM would have to pay $88 per vehicle. To put these costs in perspective, Chrysler lost an average of $950 per vehicle sold in North America last

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Old pine trees: Home of the endangered red-cockaded woodpecker

Trading Spaces

Conservation efforts get a boost from the market

BY BETTY JOYCE NASH

Red-cockaded woodpeckers choose real estate carefully. They prefer drilling cavities in old pine trees — longleaf if they can get it — amid open space. A golf course, for instance. They're picky, territorial, and because they're endangered, they influence private land transactions in a big way. They live in 10 Southeastern states on a sliver (3 percent) of their original longleaf pine habitat.

Even after federal protection in 1973, their numbers continued to slide, in part because frustrated landowners tried to deter or get rid of the birds. Some cut forests before maturity to avoid woodpecker cavities or allowed dense hardwood growth to spoil foraging area under the pines. All this to avoid future limitations on how property owners could use their land.

Something was very wrong with the incentives here: Habitat and species preservation demanded a truce. Owners of the preferred pine tracts needed encouragement to manage forests in a woodpecker-friendly way without liability. A conservation tool called Safe Harbor does that. Landowners voluntarily agree to restore woodpecker habitat; in return, the U.S. Fish and Wildlife Service frees them from regulatory limits should those management practices attract additional groups of birds beyond the original "baseline." Voila — incentive.

"It removes regulatory risk and allows landowners to engage in practices beneficial to them and the woodpecker," says Michael Bean, an attorney at Environmental Defense, the nonprofit environmental group that has pioneered Safe Harbor and other conservation incentives.

Natural Remedy

Conservation increasingly pits private interests against public. Conflicts will only intensify as development continues to chop up open land and species habitat.

Incentives, however, have demonstrated over the past decade that they can turn environmental liabilities into assets. Under some programs, farmers can sever and sell development rights. In others, developer obligations can be transferred to "mitigation banks" that sell credits from private, certified-restored natural areas. Both create tradable commodities. Both achieve social goals through market enterprises.

Such incentives can inspire landowners to maintain land and correct the negative consequences of development. Now, red-cockaded woodpeckers are multiplying in the Southeast, with the help of incentive-based agreements like Safe Harbor. The Sustainable Land Fund is ironing out details for a mitigation bank near Elkins, W.Va., for the threatened Cheat Mountain salamander and West Virginia northern flying squirrel. And a market for transferable development rights in Maryland has preserved 17,500 acres of farmland in Calvert County.

"We know incentives inform what landowners decide to do with their properties, so the idea of now turning those around and saying, 'How can we use that same technology, that same financial set of tools to create a longer-term, sustainable future?' is by my way of thinking just an appropriate new mechanism we need to adopt to do more than we can possibly do with the old tools," says William Ginn. He directs the Global Forest Partnership at

PHOTOGRAPHY: U.S. FISH AND WILDLIFE SERVICE

The Nature Conservancy and wrote the 2005 book, *Investing in Nature*.

Using market tools to achieve conservation goals isn't a new idea, but it is gaining currency as preservation funds dwindle and regulation proves inadequate.

Environmental regulation tries to make up for costs that affect society, costs that aren't borne by firms or landowners, called externalities. Like pollution. Or doing in the last red-cockaded woodpecker. But a one-size-fits-all standard may not work as envisioned. (Economists John List, Michael Margolis, and Daniel Osgood have written a paper suggesting that the U.S. Endangered Species Act has accelerated development, leading to habitat and even species decline. Property owners, the authors argue, are forward-looking and when they see the "act as a threat to their development rights," they may respond "by developing preemptively" that is, before restrictions imposed by the act are applied to them.)

The Birdie

Pinehurst, a resort in the Sandhills of south central North Carolina, was in on Safe Harbor from the get-go, says Brad Kocher, vice president of grounds and golf course management. His interest dates back to 1995, when the resort's No. 8 golf course was under construction. A shame, he recalls thinking, that the resort couldn't do something to attract more birds. "But if I did something to encourage the species on No. 8, I [would have] encumbered anybody within a half-mile radius of that tree, and they were not going to be very happy with me."

Safe Harbor will protect landowners from future restrictions once the original group of birds is documented. Owners also must enhance the habitat. Pinehurst has about 11 families of red-cockaded woodpeckers, and has won awards for stewardship. The agreement extends to neighboring properties affected if new woodpeckers are drawn by Pinehurst habitat.

Incentives can prompt improbable acts: After Hurricane Fran in 1996, a landowner reported a downed cavity tree and insisted that a biologist drill an artificial cavity ASAP so the woodpeckers would stay. Today, about 100 Safe Harbor agreements cover about 50,000 acres, according to Susan Ladd Miller of the U.S. Fish and Wildlife Service. And six new groups of red-cockaded woodpeckers have settled in the North Carolina Sandhills.

"What it did was allow us to not just be the bad guy, the regulatory guy, but allowed us to have positive relationships with these landowners," Miller says. Safe Harbor and other conservation plans have inspired some private landowners to put land in conservation easements, one adjacent to Ft. Bragg, desperate for noise buffers and critter habitat. (By law, federal lands must recover endangered species.)

Banking on Conservation

Birds can be "banked." Two elderly women in North Carolina needed to sell timber to pay medical expenses but were hindered by the discovery of three red-cockaded woodpeckers. Those birds were moved to Nature Conservancy land in Sussex County, Va. The Piney Grove Preserve, 2,700 acres of primo foraging habitat, has twice been a mitigation bank for the woodpeckers.

Ralph Costa of the U.S. Fish and Wildlife Service brokered the deal. He tracks the red-cockaded woodpeckers' progress and works out agreements with landowners all over the Southeast — public and private. Between 100 and 200 groups of birds are growing annually throughout the region on public and private land, Costa says. Landowners must pay the mitigation costs.

Costa explains: "I get a phone call … 'Got two groups to get off my property — I need the money.' I give them the names of all the mitigation banks and contacts within their recovery unit and that's the end of my involvement. At that point, they call the bank and negotiate the price. I don't care if it's free or a million dollars."

One cluster of birds sold for $100,000 and went to a conservation easement owned by the University of South Carolina, Costa says. The birds came from property being developed on the coast of South Carolina. "What drives the price [is the] value of the timber and/or the dirt for development on the mitigation property," he says. "We have some prices floating around right now approaching $250,000 for a developer who has a group they want to get rid of and it's because the land could be used for timber." Few high-dollar groups of woodpeckers remain on coastal high-dollar dirt, Costa says, making such transactions rare.

While such informal trades don't constitute a true conservation or mitigation bank with active trading, that concept is gaining ground. California established rules for the first endangered species banks in 1995, and in 2003, the U.S. Department of the Interior issued guidelines. Under a command and control system, if an endangered species were found during development, a protracted process ensued that often led to piecemeal preservation. Using endangered species mitigation banks, an "enviropreneur" may buy and manage land, gaining appropriate agency approvals. (Those in the business say that, for now, they're overregulated but expect that to diminish as the banks prove themselves.)

A California firm, Wildlands, Inc., has opened seven mitigation banks since November; the latest one preserves habitat for the giant garter snake in an eight-county area near Sacramento, Calif. Wayne White works as a consultant for mitigation banks, having learned the ropes during his career with the U.S. Fish and Wildlife Service.

A new mitigation bank carries risk just like any other business. You need to know your market and how many credits you'll have to sell to break even or to make a profit, White says. The bank improves, monitors, and establishes an endowment to ensure management in perpetuity. And here's the trickiest part, he says: "Can you sell the credits?"

Conservation banks seem sound, but they need tweaking. California's first bank, formed in 1995, went bankrupt in 2005. "Agencies and bankers learned you have to have a good financial portfolio," White says. Since then, state and federal wildlife agencies have developed tools to monitor financial performance.

Red-cockaded woodpeckers average about eight inches in length and feed mostly on insects. Landowners face fewer restrictions on property use in return for habitat maintenance.

Flexible Farmland in Calvert County

Perhaps the oldest conservation incentive tool comes in the form of "rights" that can be sold off farm properties to offset additional density elsewhere.

From the top half of Calvert County, Md., you can commute to Washington, D.C., in about 35 minutes. This Eastern Shore county has been a prime bedroom community even as far back as the early 1980s. Between 1990 and 2000, Calvert was the fastest-growing county in Maryland.

"We were one of the first to feel the effect of the concept of a bedroom community," says Susan Hance-Wells. Her family has lived on Calvert farmland since it was established some 300 years ago. Today, she grows corn, soybeans, and oats, and she breeds Friesian horses.

Worried about disappearing farmland, Hance-Wells and her father, Maryland's first secretary of agriculture, enrolled in Calvert County's transferable development rights (TDR) program back in 1979. Their fears illustrate the externality that isn't accounted for by a builder — in this case, the reduction of open space and loss of farmland.

In a TDR market, development potential transfers from one parcel to another. It can be used to preserve natural or historic areas as well as species habitat. Zoning, a typical regulatory response, often doesn't work the way it's supposed to because of what economists call "rent-seeking." If owners feel a classification deprives them of income, they'll pressure local authorities for change.

Paul Thorsnes of the University of Otago in New Zealand and Gerald Simons of Grand Valley State University in Michigan have studied the issue and written: "In short, however efficient the allocation of land, the inequitable distribution of costs and benefits plagues open-space zoning." But creating a market for development rights is preserving land, particularly in Calvert and Montgomery counties.

Prices are determined through supply and demand, not appraisals. "If the builders are building, and they need those rights to increase density in the subdivisions, then the price goes up," Hance-Wells explains.

The Power of Prices

Channeling development through a TDR market draws on the same principles as free market environmentalism. In theory, people choose based on self-interest and everybody benefits. "Regulation to a standard means forcing some people to be at a position they'd rather not be," says Margaret Walls, an economist at Resources for the Future, a Washington, D.C., think tank. "Whether it has to do with acres of land or power plant emissions, market-based instruments tend to have more flexibility."

Walls, with co-authors Virginia McConnell and Elizabeth Kopits, has studied the market for development rights in Calvert County. "It creates a price for selling these rights, an incentive for people to preserve this land permanently," McConnell notes.

One measure of a TDR program's success lies in trading activity, McConnell says. "So often the programs are on the books but nobody makes transactions; supply and demand are out of whack. If the market works in the sense that people are participating, then you know land is being preserved."

In Calvert County, any landowner with productive soil may enroll and sell TDRs. Owners also can develop their land or buy rights and develop beyond base zoning limits. A single TDR preserves one land parcel. McConnell points out that one of the downsides to TDR programs is adverse selection. Conceivably, some owners sell rights who may never have intended to sell or develop their property in the first place. That could lead to more density than would occur under a straight zoning regime.

About 142 TDR programs are ongoing in the United States, some more successful than others. Getting supply and demand in sync is critical. If people don't know who is selling development rights, there are problems matching willing buyers and sellers. To remedy a thin market and price fluctuation, Calvert County began in 1993 to buy TDRs annually at announced prices. They also now publish a newsletter to keep information flowing.

With the uncertainty reduced, McConnell says, trading increased. A recent study of TDR programs found that market stimulation through such public purchases helps balance supply and demand and is characteristic of successful TDR markets.

Purchases vary from year to year and prices have increased from an average of $2,500 in 2001 to $7,500 in 2005. Maryland's TDR program has preserved 12,000 acres, and Calvert County has bought 5,500 acres to retire permanently. Separately, the state has bought easements that have preserved 7,000 acres.

Not Perfect

Critics point out, though, that development in Calvert County sprouted in the rural communities anyway, demonstrating low demand for dense residential development. While the development pattern isn't perfect, flexibility may have worked to the county's advantage.

"A lot of programs try to dictate that the sales go into more high-density areas; as a result it sometimes limits the demand for them," Walls says. "TDRs are not a growth limiting tool but a growth allocation, spatial allocation tool."

High land prices have brought new owners to TDRs, says Susan Hance-Wells, but many are "farmettes" rather than large-tract farms. "Some of the land that will get in is not what we originally intended, but they preserve farm communities. It's insulating the farms in that community against increased density," she says. "You're going to have cases that don't suit what you're looking for or don't accomplish the goals, but they're not going to be in the majority."

OK, so maybe the development isn't ideally situated. And perhaps it isn't a true market, as Thorsnes points out, because the zones are predetermined by planners. But the fact remains that farmland is being preserved.

Likewise, maybe Safe Harbor won't satisfy everybody, but it's increasing populations of the red-cockaded woodpecker. And mitigation banks are criticized for "enabling" development. Yet the private banks, the successful ones, are preserving larger sites and providing permanent management for endangered animals. As markets for endangered species and open land mature and go mainstream, they may reveal nature's true value. **RF**

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GRINDING GEARS • *continued from page 27*

year, while Ford lost $2,015 per vehicle and GM lost $335 per vehicle.

Some industry observers argue that if it weren't for the cost of the jobs bank, mass layoffs would have been more common in the automotive industry. Sean McAlinden, chief economist at the Center for Automotive Research in Ann Arbor, Mich., agreed with this argument in a June 2004 report.

If the Big Three held firm on prices during the onset of the 2001 recession, McAlinden noted, they would have laid off tens of thousands of workers who would have collected supplementary unemployment benefits and, eventually, full pay and benefits in the jobs bank. "The companies, already facing pension shortfalls, and remembering the disastrous cash drain of such layoffs in 1992 for GM, cut prices instead of production and employment."

This overcapacity has been partially masked by strong sales of high-margin trucks and sport-utility vehicles. But continued poor sales of the Big Three's cars are forcing automakers to make more drastic changes. With or without the jobs bank, it's a more challenging environment for both American automakers and the people they employ. **RF**

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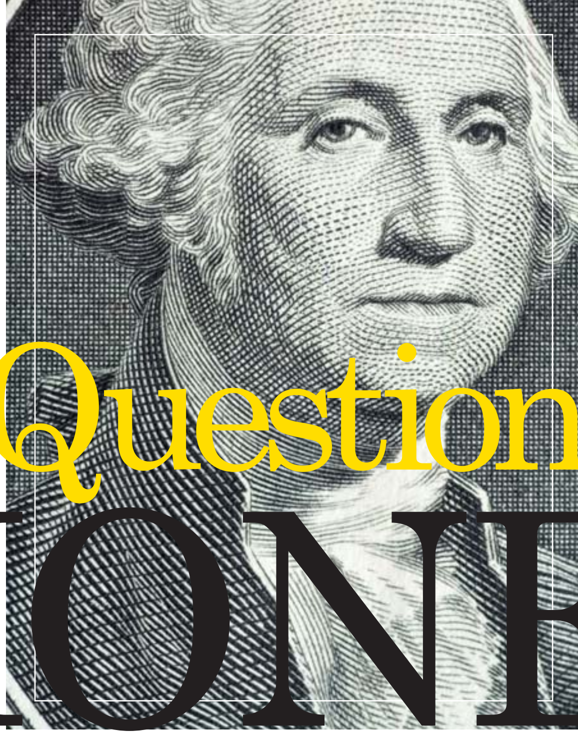


A Question Of MONEY

Does money still matter for monetary policy?

BY VANESSA SUMO

In its early days, the Bank of England used a weather vane to predict when commercial ships would arrive at the port of London. Variable winds on the river Thames made docking times uncertain, causing sudden shifts in the demand for money and credit. But with the weather vane's guidance, central bankers could overcome this uncertainty and wield more prudent control over the quantity of money in the economy.

Such a gauge would be useful today. Central bankers find the link between money and inflation to be fickle in practice. This is partly because the definition of money has been evolving along with the financial landscape. Ideally, central bankers would like to predict shifts in the demand for money that people use to purchase goods and services. But financial deregulation and innovation has allowed banks, for instance, to create new types of products. This has blurred the line between what is "transactions" money and what is not. And so it has become harder to pin down money demand.

Central bankers all over the world, including the Federal Reserve, often give this reason as to why they have paid increasingly scarce attention to money when conducting monetary policy. Indeed, *The Economist* noted in 2006 that former Fed Chairman Alan Greenspan did not mention the word "money" in 10 speeches. His successor, Ben Bernanke, however, did talk about money in a speech at a European Central Bank conference late last year, but only to confirm that "monetary and credit aggregates have not played a central role in the formulation of U.S. monetary policy" since the monetarist experiment that brought down inflation under Paul Volcker more than a quarter of a century ago.

Is money still relevant for monetary policy? It might seem odd that money does not occupy a more prominent place. After all, Milton Friedman's proposition that "inflation is always and everywhere a monetary phenomenon" is widely accepted as a general principle, with some qualifications — which would suggest that the key to stabilizing inflation is to control the growth of money. As Mervyn King, the Governor of the Bank of England, asks, "How do we explain the apparent contradiction that the acceptance of the idea that inflation is a monetary phenomenon has been accompanied by the lack of any reference to money in the conduct of monetary policy?" The paradox is that as central banks recognize price stability as their main objective, they seem to be giving a smaller role to money. This is nowhere more apparent than in central banks' principal choice of a policy instrument.

Instruments and Rules

Achieving price and output stability is the main objective of central banks, but these are not the variables that they can directly control. Rather, central banks operate through targets and instruments to reach their ultimate objectives. Insofar as there is a reliable relationship between instruments and goals, central banks can tweak their instruments to achieve their desired impact on the economy.

Most central banks prefer to use interest rates as an instrument through which they can carry out monetary policy. For instance, the Fed's Federal Open Market Committee (FOMC) sets the fed funds rate, its policy instrument of choice. Depending on its outlook of the economy, the FOMC meets eight times a year to raise, lower, or keep the fed funds rate constant.

But the interest rate is not the only instrument that central banks can use. They can also opt to control the quantity of money circulating in the economy. In other words, central banks can either choose to set the *quantity* of money or set the *price* of holding money; that is, the interest rate. Thus, fixing the interest rate means that the amount of money would have to adjust in response to the level of the interest rate. Likewise, if central banks decide to control money, then they would have to let the interest rate fluctuate as it will. Under certain conditions, these may not be equivalent strategies.

The classic 1970 analysis by William Poole, president of the St. Louis Fed, shows us that if the central bank has to choose a policy instrument before observing the disturbances to the goods and money markets, then setting either the interest rate or the stock of money can lead to smaller output fluctuations — variability in gross domestic product — depending on the type of shocks that are present. If there is an aggregate demand shock (say, a huge increase in government spending), then fixing the interest rate will lead to larger output fluctuations than controlling money supply and letting the interest rate rise, which automatically stabilizes output. On the other hand, if the demand for money is unruly (as explained earlier), then fixing the stock of money can lead to more volatile interest rates and larger output fluctuations, such that keeping the interest rate constant is more desirable.

Along with these debates on the choice of a monetary policy instrument were discussions on whether monetary policy would be better served by following a rule (to set the money supply or the interest rate) or to allow the central bank's discretion. Policy rules have the advantage of being easily understood by the public, so that they can hold the central bank accountable for its decisions. Friedman, for instance, advocated adhering to a "money rule": a proposal to increase the stock of money by a fixed percentage each month (corresponding to the growth in long-run output). His preference for a rule-based policy was founded on the observation that there is a lengthy interval from measuring current economic conditions to implementing policy to affecting the public's borrowing and spending decisions. By the time the policy takes effect, the discretionary response may no longer be appropriate. In this way, Friedman thought that simply sticking to a money rule rather than exercising discretion could do less harm to the economy.

But the policy rules that are discussed these days are "activist" rules rather than constant rate of growth rules like Friedman's. Activist rules can be expressed in terms of a formula, which describes how the value of a policy instrument adjusts or "feeds back" in response to economic conditions.

Central banks can use both rules and discretion to varying degrees, and even if some would appear to lean more toward discretion (including, arguably, the Fed), rules play a prominent role not only as a guide to discretion but also as a benchmark for outsiders to use when thinking about the central bank's monetary policy stance. And because monetary policy has evolved over the years such that the interest rate has become the preferred instrument, the choice of rules has likewise tilted in favor of interest rate rules and away from money growth rules.

Measure for Measure

In 1993, John Taylor of Stanford University formulated a policy rule that closely approximated the Fed's policy actions over several years. The Taylor rule has become very well-known, in part because it specifies a short-term interest rate and so makes it easy to compare with the Fed's actual policy stance. The Taylor rule prescribes a nominal interest rate, in this case the fed funds rate, which reflects movements around a long-run real interest rate depending on how much actual inflation and output deviate from their respective targets.

While the central bank chooses a target rate for inflation, the output "target" is determined by economic fundamentals, such as productivity and population growth. This "feedback rule" is designed in such a way that if actual inflation and output are above their desired levels, the fed funds rate should be raised in order to dampen these inflationary forces. The bigger the gap between actual inflation and output and their targets, the higher the fed funds rate and the tighter monetary policy should be.

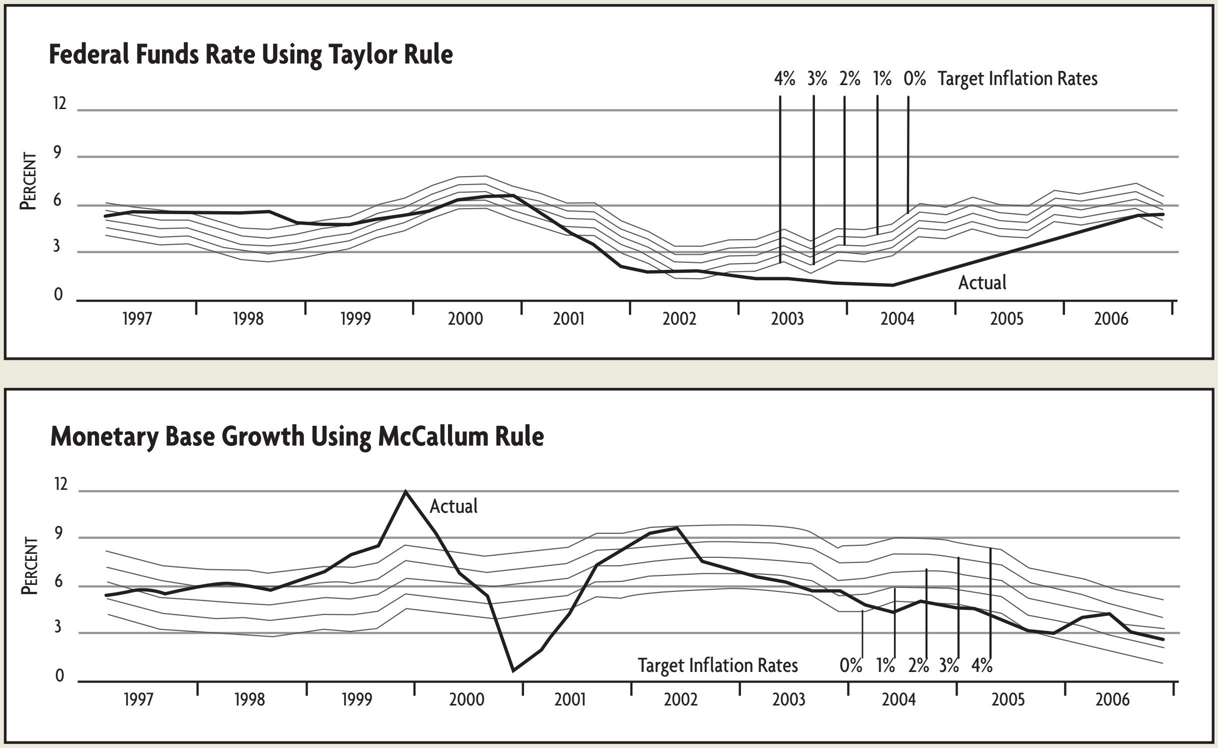
Several years before the Taylor rule, Bennett McCallum, an economist at Carnegie Mellon University and a visiting scholar at the Richmond Fed, devised a rule that is often used alongside Taylor's to track the Fed's monetary policy stance. Unlike the Taylor rule, which sets the nominal interest rate, the McCallum rule specifies a growth rate for base money, which is typically the amount of currency plus commercial bank reserves kept at the central bank. By prescribing how much the base money should rise or fall, a central bank is able to influence the stock of money in the financial system.

Base money, according to this "monetarist" rule, should expand as fast as the desired growth in nominal income — similar to Friedman's policy prescription — and adjust for deviations of actual income growth from this preferred rate. For instance, if nominal income is moving sluggishly, then the base money should be allowed to grow faster in order to stimulate the economy. Thus, while the Taylor rule feeds back from deviations of output and inflation from its targets, the McCallum rule feeds back from movements away from the desired path of nominal income.

Because the McCallum rule is a "money rule," the conventional wisdom has been that rules like Taylor's are better able to capture the practice of well-run interest-rate-

Monetary Policy Rules

If monetary policy were set using the Taylor rule, then it would have prescribed a higher interest rate in recent years. The McCallum rule, on the other hand, would have recommended a looser policy stance.



SOURCE: St. Louis Fed *Monetary Trends,* April 2007

setting central banks — such as at the Fed. This is not necessarily accurate.

Using Greenspan's tenure at the helm of the Fed as a benchmark for a successful period of monetary policy, McCallum has compared how close the policy prescriptions of the two rules are to the actual fed funds rate set by the Fed and the actual base money growth. In a note for the Shadow Open Market Committee, a group of economists who meet regularly to evaluate the policy choices of the Fed, McCallum finds that "actual policy during the Greenspan era has not differed from that recommended by the McCallum rule by a significantly greater extent than is the case for the Taylor rule."

If the same exercise is used to gauge the tightness or looseness of a central bank's monetary policy, then the two rules have been giving different perspectives over the last four years. In the St. Louis Fed's *Monetary Trends* report, which regularly tracks the settings prescribed by the two rules (see above), the Taylor rule has for several years suggested that monetary policy has been too loose while the McCallum rule has suggested that monetary policy has been too tight, assuming that the Fed has set an implicit 2 percent inflation target. However, the McCallum base money growth rate has been closer to the actual values. (Some observers would say that the fall in global real interest rates means that the real interest rate indicated in the Taylor rule — 2 percent — should be adjusted downward, which would allow it to come closer to the actual fed funds rate.)

Another way to compare the two rules is to look at points in history when central banks may have followed a policy that was either too loose or too tight. For instance, both rules correctly suggest that monetary policy was much too loose in the United States during the great inflation of the 1970s. However, there were episodes when the base money rule was dropping the "right" hints while the interest rate rule was not. "I think money growth rules give better signals as to what needs to be done," says McCallum in an interview. For instance, monetary policy at the Bank of Japan may have been too loose during the asset price bubble of the late 1980s, which the McCallum rule correctly calls. The Taylor rule, on the other hand, indicated that policy was too tight or about right during that period. But McCallum recognizes that the evidence in favor of money growth rules is not completely decisive. "It's not an easy argument to make and not all good monetary economists agree with it," says McCallum.

Nevertheless, McCallum's base money growth rule seems to perform well, and can give "ideal" policy prescriptions as well as or perhaps even sometimes better than Taylor's interest rate rule. Still, why do central banks favor interest rates over money as a policy instrument? The instability in the demand for money and how accurately money is defined is one reason, but there are others. Central banks may prefer to smooth interest rates, thus making it quite natural for them to use the interest rate as a policy instrument. Commercial banks, for instance, dislike interest rate variability because it can wreak havoc on the value of their assets if interest rates move sharply up and down. "Central bankers spend a lot of time in the company of bankers, and they want to keep the financial market happy," says McCallum.

Central banks may also have a better understanding than before of how to adjust interest rates in a timely way. "We have a much better appreciation of what disciplined discretionary monetary policy is today," says Laurence Meyer, a former Federal Reserve Board governor, who is now an economist at the consulting firm Macroeconomic Advisers.

In the 1970s, monetarists argued that the Fed needed to move away from its practice of setting the fed funds rate because it was doing a bad job of judging where the interest rate should be in order to bring down inflation. Hence, it would be better to target the supply of money. But because of the important lessons learned from that period of high inflation, central bankers have much more confidence today in their ability to conduct monetary policy by choosing the right level of interest rates. And to the extent that central banks prefer to smooth interest rates, then they don't need to abandon their instrument of choice. "I think they've reached a better compromise between the desirability of avoiding interest rate volatility and the desirability of making sure interest rates move up and down when they need to for economic stability," says Edward Nelson, an economist at the St. Louis Fed.

Follow the Money

The Fed under Paul Volcker was successful in orchestrating an end to the high and erratic inflation of the 1970s, largely because it paid attention to the band of monetarists who said that the central bank could do something about it. It might seem odd then that money no longer plays a leading role in monetary policy today, as if the Fed were risking the possibility of a return to runaway inflation.

Does abandoning an emphasis on money mean that the Fed has forgotten the lessons learned from that period? Michael Woodford, an economist at Columbia University, thinks otherwise. "I would argue that the most important of these lessons, and the ones that are of continuing relevance to the conduct of policy today, are not dependent on the thesis of the importance of monetary aggregates," Woodford said in his remarks at a European Central Bank conference late last year.

Monetarists made it clear that central banks could contain inflation, as opposed to the prevailing view at that time that inflation was largely a product of too much power being wielded by labor unions demanding higher wages and monopolist producers demanding higher prices. They also emphasized the importance of a commitment to a policy rule that would foster credibility and anchor inflation expectations. On both counts, however, Woodford emphasizes that adhering to a money growth target is not the only way to bring down inflation and not the only kind of commitment that a central bank can make. Central banks that have set an explicit inflation target, for instance, bind themselves to a specific numerical target and justify this course of action to the public. And though the Fed has no such explicit targets, it often speaks persuasively about its commitment to price stability, and its performance since the early 1980s has made these statements very credible.

But perhaps the biggest blow to the case for money is that it has been eased out of today's consensus model for understanding how monetary policy affects the economy. It used to be that economists and central bankers thought of money as the instrument that influences aggregate spending decisions and subsequently inflation, the interest rate being determined by the demand and supply of money in the money market. In the new consensus model, however, an interest rate rule of the type proposed by Taylor has replaced the money market. In other words, the amount of money in the system is now determined by the interest rate and not the other way around, rendering money essentially superfluous in this model.

Money may not be everything, but has it become completely dispensable? Or is it still worthwhile to track the growth of money, even in some supporting role? "I've come to believe that the right thing to do is to think of monetary aggregates as an indicator, but not necessarily use it as the [instrument] that the Fed sets from week to week," says McCallum.

While Laurence Meyer was at the Board of Governors, he made it a practice to meet with money specialists on the staff before every FOMC meeting. He thought that looking at the behavior of money was a worthwhile cross-check for any signals about future macroeconomic developments which other data may not have picked up. However, he often walked away empty-handed. "In five-and-a-half years, I never got anything out of that meeting that would have altered my views about monetary policy," says Meyer.

Still, McCallum thinks that it is unwise to ignore money. "It's got better information than the interest rates for central banks," he says. Nelson likewise agrees that money could be a good indicator. For instance, if money growth is rising but the interest rate is kept unchanged (because the central bank sets the interest rate), then the central bank has to print more money just to keep the interest rate constant.

But why has the central bank needed to print more money?

Perhaps because expectations of future income or future inflation have increased, so people are building up their money holdings. "That's a change in the economy ... that you wouldn't see just by looking at interest rates," says the St. Louis Fed's Nelson. More generally, the amount of money may be influenced by the prices of an entire range of assets and the interest rate is just one price, so money may reveal additional information about people's spending decisions.

For McCallum and other monetarists, money may still make the world go around, but they've come to hold a more pragmatic view. "Central banks use interest rates rules, so we want to converse with them. John Taylor's paper was very helpful ... It's healthy for academics to talk to central banks," says McCallum. Even some of McCallum's own work reflects the current state of affairs.

With respect to monetary policy practice, Fed Chairman Bernanke believes that it may be "unwise" to rely heavily on money as a guide to policy in the United States. But he also thinks that "money growth may contain important information about future economic developments," enough so that the Fed will probably continue to keep an eye on money growth. **RF**

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DECODING MESSAGES
From The Yield Curve

What does the recent inversion imply for banks in the Fifth District and beyond?

BY ELIANA BALLA, ROBERT CARPENTER, AND MARK VAUGHAN

Bank supervisors get paid to worry — even when there may be little to worry about. Historically, when the yield curve inverts — that is, when short-term interest rates rise higher than long-term interest rates — banks have gotten into trouble. Short rates have exceeded long rates consistently since July 2006, so supervisors are naturally growing restless. Are banks in the Fifth District and across the country potentially headed for problems?

The yield curve plots the return on a given type of debt instrument — if held to maturity — across a range of maturities. The curve is typically drawn using Treasury bills, notes, and bonds because U.S. government debt is fairly homogenous, enjoying virtually no default risk and active secondary markets.

The slope of the yield curve, also called the term spread, is often measured by the difference between the rate on 10-year Treasury notes and three-month Treasury bills. The term spread reflects the premium demanded by investors for bearing greater interest-rate risk on long-term Treasuries, as well as expectations about the future path of interest rates on short-term Treasuries.

The yield curve almost always slopes upward — put another way, long-term interest rates are generally higher than short-term rates. But the curve can take other shapes. It can be flat, for example, indicating that short- and long-term Treasuries offer the same rates. It can also slope downward or "invert," indicating that short rates exceed long rates.

An inverted yield curve is worrisome to bank supervisors because it has typically put pressure on the margin between interest earnings and funding costs. Such pressure can, in turn, tempt bankers to take more risk. Both effects have the potential to weaken bank conditions.

An inverted yield curve worries supervisors for an additional reason. Inversion has typically signaled a coming recession, and recessions undermine the ability of bank customers to repay their loans.

The chain from inversion to recession to loan losses shows up clearly in recent data. In July 2000, the yield curve inverted, and a recession followed, starting in March 2001. Between year-end 2000 and year-end 2002 the median charge-off rate for U.S. banks — net loan losses divided by total loans — grew by 50 percent before peaking at 0.16 percent in December 2002.

The yield curve was relatively flat throughout most of 2006 before inverting last summer. Only twice in the last 20 years has the Treasury yield curve departed from its usual shape for so long. More ominously, the curve has inverted prior to every recession since 1960, and only once in the past 70 years has a recession not followed a period of inversion lasting more than a month.

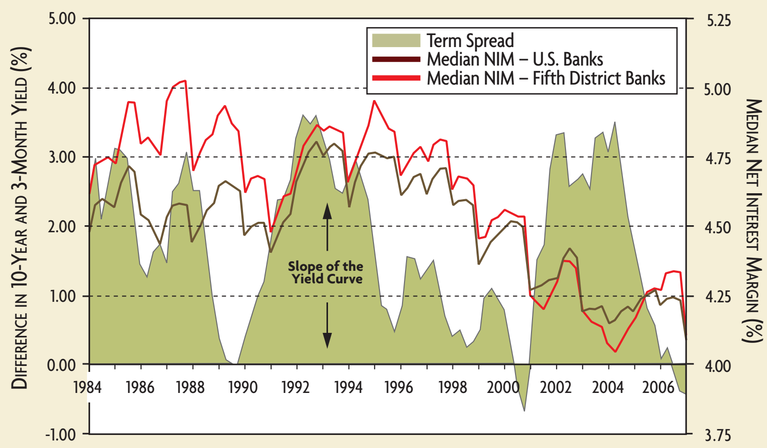
Term Spreads and NIMs

The term spread is a key driver of net interest margin (NIM), which, in turn, is an important source of bank profits. Formally, NIM is measured as the difference between the interest income from loans and securities and the interest expense on deposits, divided by interest-earning assets. Loans tend to have longer maturities than deposits, so bankers make money when the long-term rates they charge loan customers exceed the short-term rates they pay depositors. As the yield curve begins to invert, however, margins narrow and profitability suffers. The positive relationship can be seen in Figure 1, which traces the term spread and median NIM for U.S. and Fifth District banks from 1984 through March 2007.

A persistently flat or inverted yield curve can also lure bankers into assuming more risk, in the hope, potentially higher returns will offset declining NIM. This phenomenon, called "chasing yield," can take a number of forms. A bank could, for example, grow its asset portfolio for a given level of equity capital (a so-called leveraged-growth strategy) or purchase securities with greater levels of interest-rate risk. Traditionally, banks have opted to take more credit risk — by weakening lending standards, offering new lending products, or lending in unfamiliar territory. On average, chasing yield has resulted in greater loan losses, with negative consequences for bank conditions.

Figure 1

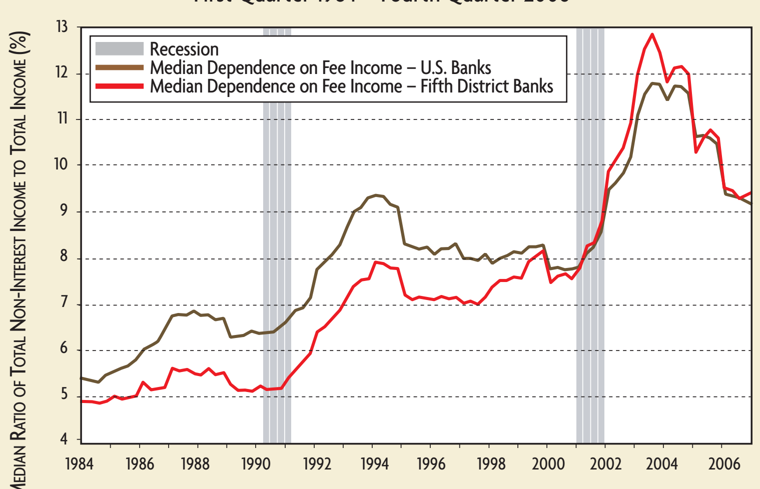
Treasury Yield Curve and Net Interest Margins (NIMs)
First Quarter 1984 – First Quarter 2007



SOURCE: Federal Reserve Economic Data (FRED), Federal Reserve Bank of St. Louis

Figure 2

Fee Income as a Proportion of Total Income
First Quarter 1984 – Fourth Quarter 2006



SOURCES: Federal Reserve Economic Data (FRED), Federal Reserve Bank of St. Louis; and the National Bureau of Economic Research

Whither NIMs?

The current inversion has yet to produce a marked decline in net interest margins because the traditional relationship has weakened since 2001. A close look at Figure 1 shows this weakening. Between 2001 and 2004, the term spread widened to a 13-year high while margins for U.S. and Fifth District banks drifted downward. Then, in early 2004, median NIM began to climb while the spread narrowed dramatically.

Analysis of bank-level data for Maryland, Washington, D.C., West Virginia, Virginia, North Carolina, and South Carolina suggests the factors behind nationwide trends are also at work in the Fifth District. Across the country, banks have insulated margins through more careful asset-liability management and greater reliance on long-term fixed-rate Federal Home Loan Bank advances. Profits also have been shielded from narrowing margins through greater reliance on fees from services, most prominently for larger banks. This trend can be seen in Figure 2. Between year-end 1986 and year-end 2006, median fee dependence (i.e., the portion of bank income derived from fees) rose from 6.45 percent to 9.32 percent in the nation and from 5.23 percent to 9.38 percent in the Fifth District.

Although flat-to-negative term spreads have yet to squeeze margins, they still could. Three times since 1984 — in 1989, 2000, and 2006 — the yield curve flattened or inverted and Fifth District NIMs declined sharply, but with a lag. This experience suggests bank margins and profits could still be at risk should the unusual slope of the yield curve persist.

Recession Radar

Assessing the potential for loan losses implied by a flat or inverted yield curve requires a look at the role of monetary policy. The Federal Reserve stabilizes prices by targeting a key short-term interest rate — the federal funds rate. Suppose the Fed raises the federal funds rate to fight inflation. The increase will ripple across all interest rates in financial markets, but the rise in short rates will be larger than the rise in long rates. Long rates will not rise as much because they reflect the average of short rates expected to prevail over time, and the Fed historically has cut the federal funds rate with the passing of the inflation threat. If the rise in the federal funds rate is large, then short rates could move above long rates. Such a hike is also likely to slow the economy.

In formal statistical studies, economists Arturo Estrella of the New York Fed and Frederic Mishkin, now a Federal Reserve Board governor, and more recently, Estrella and Mary Trubin, also of the New York Fed, documented the link between the term spread and recession probability. Jonathan Wright, an economist at the Federal Reserve Board, has also found a connection, though his work suggests that the forecasting ability of the term spread improves dramatically when the federal funds rate is taken into account to capture information about current monetary policy.

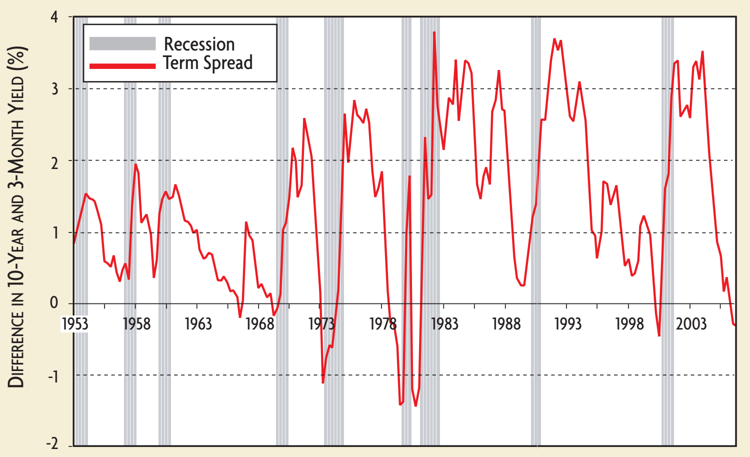
On average, since 1990, the term spread has been 1.72 percent, and the federal funds rate has been 4.37 percent. Using Wright's model, these numbers imply an average probability of recession of 2.5 percent. Since the yield curve inverted in August 2006, the spread has averaged -0.21 percent, and the federal funds rate has averaged 5.25 percent, implying a recession probability of 42.8 percent, though most analysts' forecasts put the chances of recession lower than that.

Banks Are Solid

The recent behavior of the term spread does not necessarily imply that bank supervisors should leap into action to head off loan-quality problems. An inverted yield curve has preceded every recession since 1960, as seen in Figure 3, but a recession has not followed every inversion. In September 1966, for example, the term spread dipped below zero and remained negative into January 1967, yet no recession occurred. In addition, the charge-off rate tends to lag the business cycle, so supervisors should have some time to prepare if economic conditions weaken. Finally, loan quality in the Fifth District and the nation is strong by historical standards. At the end of March 2007, the median charge-off rate was 0.02 percent for Fifth District banks and 0.01 percent for U.S. banks as a whole. These figures compare with the 20-year high of 0.77 percent for the entire banking sector in December 1986.

Figure 3

Yield-Curve Inversions and Recessions
June 1953 – March 2007



SOURCES: Federal Reserve Economic Data (FRED), Federal Reserve Bank of St. Louis; and the National Bureau of Economic Research

Supervisors have another factor on their side: the robust levels of equity capital in the banking sector. Equity capital represents the owner's stake in the bank — the more capital, the less temptation to chase yield.

As of March 31, 2007, the median leverage ratio — equity capital divided by assets — was 10.16 in the Fifth District and 10.00 percent across the nation. Viewed another way, no Fifth District banks and only seven banks nationwide (of more than 7,300) were weakly capitalized, where "weak" corresponds to a simple leverage ratio under 5 percent.

Bottom Line

Taken together, the evidence suggests that the recent inversion of the yield curve may not pose a threat to bank safety and soundness. Moreover, in early June the curve "righted" itself — that is, the term spread headed above zero — for the first time in nearly a year. Still, past experience combined with the lengthy duration of the yield-curve inversion suggests bank supervisors should remain vigilant. **RF**

Eliana Balla, Robert Carpenter, and **Mark Vaughan** are economists in the Banking Supervision and Regulation Department of the Federal Reserve Bank of Richmond.

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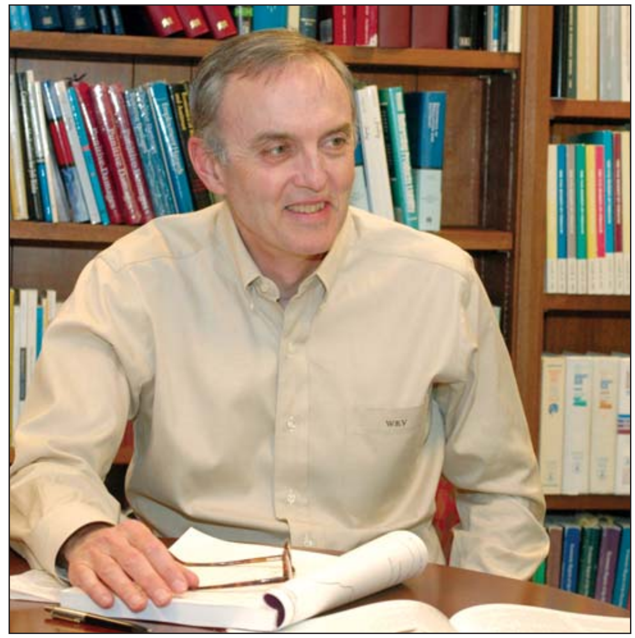
Interview

W. Kip Viscusi

Every day, people expose themselves to risk. Whether it's driving to work, crossing the street, or climbing a ladder to change a lightbulb, we engage in activities that have a small probability of injuring or even killing us. Some people — miners, construction workers, and firefighters, for instance — take jobs that are considerably more dangerous than the typical profession. Kip Viscusi has spent much of his career examining how individuals evaluate risk exposure and the public policies aimed at improving worker and consumer safety.

Viscusi has been a leader in the use of cost-benefit analysis to evaluate a wide range of regulations, having served as a consultant to the Environmental Protection Agency, the Occupational Health and Safety Administration, and the Federal Aviation Administration. He has also looked at unanticipated behavioral changes prompted by government mandates, which sometimes render those mandates ineffective or even counterproductive. In addition, he has carefully followed the multistate tobacco settlement, arguing that the agreement has done much to enrich plaintiffs' attorneys but little to discourage youth smoking, one of its ostensible goals.

Trained as an economist, Viscusi has taught in both the economics departments and the law schools of several leading universities, including Northwestern, Duke, Harvard, and now Vanderbilt, which has recently launched a Ph.D. program in law and economics. Viscusi has authored or co-authored more than 20 books, and his papers have appeared in leading journals such as the *American Economic Review*, the *Quarterly Journal of Economics*, and the *Journal of Legal Studies*. He is also the founding editor of the *Journal of Risk and Uncertainty*. Aaron Steelman interviewed Viscusi at his office at Vanderbilt on March 29, 2007.



PHOTOGRAPHY: DAN LOFTIN

RF: It seems that the public and its political representatives often do not fully appreciate the trade-offs and, in some cases, the unintended consequences associated with measures aimed at improving consumer safety. Could you give a few examples? And why do you think such regulations are viewed so positively when economists tend to be less sanguine about their virtues?

Viscusi: Congress tends to pass legislation that is supposed to rid the world of risk. "Let's get rid of pollution." "Let's make the workplace safe." That certainly sounds great in speeches. But very rarely do you see legislative mandates that permit a balancing of their costs and benefits. The U.S. Department of Transportation is arguably the main exception.

This doesn't mean the public doesn't care about the costs. In fact, when people are confronted with those costs directly, they are often opposed. But with most regulations, the costs are not explicit. There are no price tags attached to them. Also, the costs are often borne by different parties.

So, for instance, in the case of Superfund cleanups of hazardous wastes, the people who benefit from the cleanups are not paying the costs directly and thus demand the most stringent standards possible. The result is that the median cost per cancer case averted is about $7 billion. It's off the charts because you are using the responsible parties' money to clean up the site. In contrast, if you look at the amount of money people are willing to pay for houses that are not exposed to hazardous waste risks, you don't observe that kind of large trade-off at all. It's more like $5 million rather than $7 billion. Similarly, the premium that workers require to work in relatively dangerous jobs is a lot less than what government agencies spend on regulations.

Another example of the kind of thing that legislators do not fully consider is the effect of regulation on behavior. In the case of safety caps, which was one of the first risk behavior case studies I examined, there were mandatory safety cap requirements on aspirin and other potentially dangerous products that children might try to get into. So what happened? Because parents thought the safety caps made them risk-free — in fact, they were first called "childproof" caps by the Consumer Product Safety Commission — people started leaving the bottles around in the open rather than storing them, giving kids greater access. In some cases, people left the caps off altogether because they were so hard to grapple with every time you wanted to open the bottle.

As I said earlier, the main agency that seems to care about trade-offs is the Department of Transportation. The costs of the mandates they issue are quite evident in product price. If you require more safety features on cars, that will raise the price, and consumers will see that. But the link is not as direct with environmental or worker safety regulations. Economists see the costs and benefits from the economy-wide standpoint but the consumer doesn't engage in that type of analysis, and I think that's why many regulations are not subject to strict public scrutiny.

RF: How much discipline does the market impose on companies to act in a responsible way with respect to worker safety?

Viscusi: There are three major sources of financial incentives for job safety. By far the most important is the market. Workers on dangerous jobs generally perceive that they are dangerous. This drives up their wages and gives the company an incentive to make the workplace safer. If you look at it empirically, this dwarfs everything else that is going on. The number two player is workers' compensation. The premiums for workers' compensation are now in the $30 billion a year range. Particularly if you are a large enterprise, your workers' compensation bill goes up if you have a bad accident record. We found that in the absence of workers' compensation, worker fatality rates would go up by one-third. So that's a very large effect. Then, third, we get to the Occupational Safety & Health Administration (OSHA), which issues health and safety regulation for the Department of Labor. You are looking at zero effect in the early years of the agency, and maybe something like a 1 percent to 2 percent total effect on safety in recent years. It's very small.

So, overall, the market exerts the most discipline on companies to protect workers. Every death on the job generates significant wage premiums in effect. But if a worker falls to his death because the scaffolding is poorly constructed, OSHA goes in there and imposes negligible fines compared to this. It is just not a big player. Workers' compensation is a different case. In general, I think it is a very good program. The question is who pays for workers' compensation? Even though companies pay the bill directly, that bill is passed down to workers who receive lower wages.

What we found is that workers are willing to accept a wage cut that exceeds the costs of the premiums because they value the insurance more than the actuarial costs of the insurance. It's similar to people who pay more than the expected payout for auto insurance because they value having that protection. Also, workers' compensation is a highly efficient insurance program. It has very low administrative costs, so it pays out something like 80 cents on the dollar, which is tremendous. In addition, companies get value from the program because it protects them from being sued by their employees in case of an accident. They avoid a lot of litigation as a result, and I think that is a significant benefit.

RF: How does one properly derive an estimate of the value of a statistical life for use in cost-benefit analysis? How can those estimates be used to improve public policy?

Viscusi: The main technique used by economists is to look at the money-risk trade-offs reflected in the decisions that people actually make. One context is the labor market, where workers are paid more for dangerous jobs. Another context is the product market, where people pay less money for a relatively unsafe product or more money for a relatively safe product. I have looked at both contexts. But most of my work has focused on the labor market because we have a lot of data on workers' wages, which we can match to the risks of those jobs.

Controlling for other aspects of the job, we find that workers are in fact paid more if they work in hazardous jobs. This is not a new theory. Adam Smith developed this in 1776. But it was only in the 1970s that economists started estimating the relationship. My current estimate puts the value at $7 million per statistical life. What that means is that if you face an annual risk of death on the job of one chance in 10,000, on average you get paid about $700 extra per year.

During the Carter administration, I worked in the Regulatory Analysis Review Group and was the Deputy Director of the Council on Wage and Price Stability, which was responsible for regulatory oversight at that time.

W. Kip Viscusi

➤ Present Position

University Distinguished Professor of Law, Economics, and Management, Vanderbilt University

➤ Previous Faculty Appointments

Northwestern University (1976-1981 and 1985-1988), Duke University (1981-1985 and 1988-1996), and Harvard University (1996-2006)

➤ Education

A.B. (1971), M.P.P. (1973), A.M. (1974), Ph.D. (1976) Harvard University

➤ Selected Publications

Author or co-author of such books as *Risk by Choice: Regulating Health and Safety in the Workplace* (1983); *Reforming Products Liability* (1991); *Fatal Tradeoffs: Public and Private Responsibilities for Risk* (1992); *Punitive Damages: How Juries Decide* (2002); and *Smoke-Filled Rooms: A Postmortem on the Tobacco Deal* (2002)

I suggested to OSHA that they use statistical estimates such as these to value the benefits of OSHA regulations. They said, "No. It would be immoral to put a dollar value on human life. Absolutely not." Then in 1982, OSHA proposed a hazard communication regulation that for the first time would have required the labeling of dangerous chemicals in the workplace and sent it over to the Office of Management and Budget (OMB) for review.

President Reagan had just set up this group within OMB that looked at new regulations and required that the benefits be greater than the costs. OMB looked at this and said this is all very interesting but the costs are greater than the benefits. Because OSHA had argued that putting a dollar value on life was immoral, they instead said that when calculating the benefits of improved safety due to the regulation, they were only going to estimate the cost of death. The cost of death was the present value of lost earnings plus your medical costs after you are killed on the job. Well, you can call it the cost of death or you can call it the value of life, but it's still the same thing. OSHA appealed the decision to the vice president, who was in charge of all such appeals. He said it was a technical issue and needed to be settled by an expert.

I was asked to settle the dispute between the two agencies over the regulatory impact analysis. It was pretty easy. What I did was adopt every one of OMB's assumptions with the analysis except for one thing: I used my value of life number instead of the cost of death number. Doing that increased the benefits by a factor of 10. Once you used the economic value of life numbers, the regulation had benefits greater than the costs, and the regulation was issued. So after that, regulatory agencies started using the numbers. Part of the reason was that it was good economics. But a big part was that it often made their benefits look large, and that's what carried the day.

A related issue I have been working on recently is whether old people's lives are worth less than young people's lives. I was at a conference and suggested that the answer was yes, because of shorter life expectancy and lower quality of life. This generated a lot of discussion. Since that time, I have looked more closely at how the value of a statistical life varies with age. It turns out that it doesn't really drop off the table as you get older. In fact, workers at age 60 have a higher value per statistical life than workers at age 20 because they are richer and can do more things that they enjoy. To take one example, I buy cars with all these additional safety features while my son drives around in a topless Jeep Wrangler. Why would this make sense if his value per statistical life was higher than mine?

RF: What is your opinion of the compensation policy toward the families of the victims of the terrorist attacks of Sept. 11? That policy generated much criticism, but did it conform to sound economic reasoning?

Viscusi: First of all, you would not want to use the value per statistical life to compensate people because these are the values from the standpoint of prevention — for instance, how much we should pay to prevent the small probability of death. Instead, we're trying to figure out what is the optimal insurance of the losses of the families. So this situation is much more analogous to a wrongful death case in the courts. If you are killed by a drunk driver, what should the compensation be? Generally, it's the present value of lost earnings minus some deduction for consumption of the deceased. I think you would want to do the same thing with the victims of Sept. 11. What they didn't do, which the courts would do, was to continue the compensation up the income ladder. Instead, they capped the compensation at a particular amount. If you really wanted to provide income replacement and handle it the way the courts do, there would be no cap at the top. So in some ways, what they did was institute a program more similar to workers' compensation, which also has caps.

As to whether the families of the victims should have been compensated at all, that is a society-wide decision. But it's important to consider that the people who were killed on Sept. 11 were not engaged in any moral hazard. They did nothing to put themselves at any known risk. So compensation does not create any incentive effect that would cause concern.

RF: Setting aside the issue of the wars in Iraq and Afghanistan, how would you assess the public policy response to the threat of domestic terrorism post-Sept. 11? Are we thinking about the issues in a way that is roughly correct and weighing the costs and benefits in a generally rational way?

Viscusi: One problem is that economists think about these things a lot differently than other people. We are always thinking about trade-offs and balancing competing concerns. In the case of responding to terrorism risks, you have two classes of concerns that tend to be considered sacred by some people: civil liberties on one hand and people's safety on the other. You have people in each camp who say they are willing to do nothing to compromise those values. Neither one wants to admit that these things do have a finite value and that you might have to strike some sort of trade-off. The real issue is what type of trade-off you want to strike, or how much you are willing to give up to increase safety.

The reason this is tricky is we don't have very good numbers on what these risks are. We just don't have a lot of data — unlike, say the risk of being in an automobile accident. We know the probability of that with relative precision. But the estimates of the probability of a terrorist attack or the number of people who are going to die in the coming year are all over the map. So if you can't assess the likelihood of a terrorist attack or how deadly it is going to be, it is really hard to say how much you should spend to try to prevent it.

RF: What do you think of the proposal to establish a prediction market to help assess the likelihood of a terrorist attack?

Viscusi: One problem with that proposal is that people can affect the probability of that outcome. If you can bet on it and make a lot of money, then people may have an incentive to launch a terrorist attack so they can collect on their bet. Also, I'm not sure the information you would get would be refined enough to help you devise a defense strategy. It wouldn't help you much to know that the probability of an attack has gone up if you don't know the target. So the markets would need to be very specific, such as the probability of the Holland Tunnel being blown up in the next month.

RF: What do we know about the economic and legal effects of the 1998 settlement between state governments and tobacco companies? And how, if at all, should that settlement be modified?

Viscusi: I don't think there is much I can say that is good about it. From the standpoint of the industry, the idea was that if they made this settlement, they would be putting all the tobacco litigation behind them. Instead, what they did was hand out billions of dollars to plaintiffs' attorneys who have used that money to finance future litigation. So there has been a wave of lawsuits after the settlement. I would have rather seen them play out the court cases. If they lost and were responsible for all the health-care costs generated by smokers, then they would have paid up. But that was never really decided.

So this was a fairly novel legal concept: If people use a dangerous product that leads to health-care costs in the Medicaid program, you can recoup the costs. That's not true of every product. People are injured in car accidents, for instance, which generate health-care costs also. The trigger here to warrant making the cigarette industry pay the bills is that consumers have to be deceived or victims of fraudulent behavior. If there is no wrongful conduct on the part of the companies, you can't nail them. But, of course, people have known for a very long time that cigarettes were dangerous.

In 1964, the Department of Education, Health, and Welfare issued a report stating that smoking caused lung cancer. Two years later, mandatory warnings were placed on packs of cigarettes indicating that they were dangerous. This is the first mass-marketed consumer product that did not kill you immediately when used as intended which had on-product warnings. A lot of things you take for granted as having warnings, like power tools and household cleaners, did not have warnings back then. What did have warnings were really dangerous chemicals like sulfuric acid and hydrochloric acid, prescription drugs, pesticides and insecticides, and that's just about it. So it's not a state secret that cigarettes are dangerous. In fact, when asked, people vastly overstate the likelihood that a typical smoker will get lung cancer.

None of the cases went to trial. The settlement appeared to be a good idea to executives because whenever there was a rumor of a settlement, stock prices would go up. What they did not anticipate was that they would be funding a lot of other lawsuits against them.

From the standpoint of society, the main selling point was, "We need this for the kids. We are going to take the money and use it to combat youth smoking." The settlement led to what is in effect a 40-cent tax on each pack of cigarettes. The money has flowed to the states, but only a negligible amount has been used for programs aimed at preventing youth smoking. So that's the reality of what has happened, and I think the anti-smoking groups would agree with that.

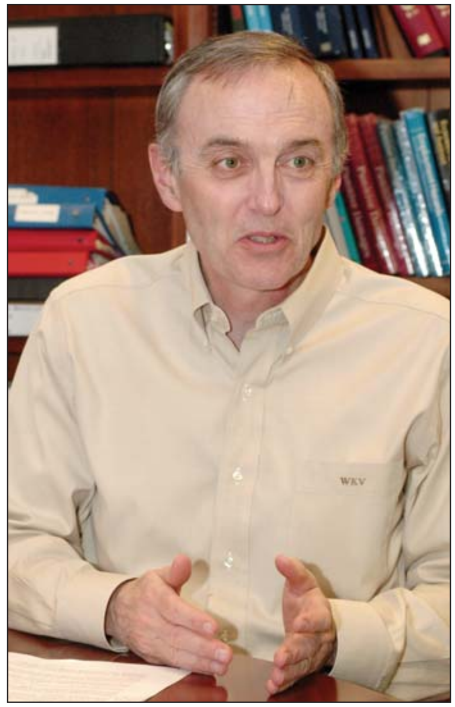
> You can't just wave a magic wand and eliminate risk for free.

Also, part of the settlement restricted the advertising of cigarettes and some have argued that has led to anticompetitive effects. The reason is that if you can't advertise your product, it's hard to introduce new brands, and that serves to lock in the existing market shares in an industry that is already highly concentrated. One of the plaintiffs' experts, Joseph Stiglitz, has attacked the agreement, arguing that it is part of a great conspiracy to limit competition. So even those on the antismoking side concede that there are some problems with the way they structured the agreement. On the one hand, they want to limit advertising. On the other hand, they don't want to restrict competition. But you can't do both.

RF: What does your work on jury analysis tell us about jurors' risk beliefs? And how do those views compare to judges' views? Also, what can be done to reform the compensation process to better align what juries award in punitive damages with what would be consistent with mainstream risk analysis?

Viscusi: Jurors are subject to a variety of behavioral anomalies in terms of how they perceive risk. One of the most important is hindsight bias. That's important for accident cases where jurors will say, "Well, they should have known that doing this would have caused the accident." They fail to perceive that at the time you take the action, there is a probability that something bad will happen, but it's not definite the person will get injured. This comes up in a variety of contexts. For instance, car companies do corporate risk analysis. They analyze the risks associated with a car and the costs associated with improving the safety, and if the costs are greater than the benefits, they don't do it. If you do that analysis and decide not to take the extra safety precautions, juries generally find you to be reckless because you have thought about the risk and decided the preventive measures weren't worth making.

So I ran a series of jury experiments and asked what they would decide if the companies acted the way economists would suggest, using the value per statistical life employed by the Department of Transportation. The results actually got worse. Before, they were awarding punitive damages of about $1 million. But when they found out that the company was valuing a statistical life at $4 million, they awarded punitive damages of $10 million. So the more responsible the companies get in how they value life, the worse they fare, because juries want to send a message and top the dollar value that the companies are using in their analysis. Juries tend to resist the whole idea of looking at what the costs are and what the benefits are and then making a rational decision based on the numbers.



I have also run surveys on judges, and judges do much better than juries in terms of how accurate their risk beliefs are with respect to the major causes of death. Jurors tend to overestimate small risks much more than judges do — even though judges overestimate as well. Judges are more cognizant of benefits and costs, and less subject to hindsight bias because they have seen lots of cases and know that not everything is preventable.

I think one reform we should have is turning over the setting of punitive damages to judges. Jurors do a much better job of evaluating whether conduct is bad than assigning a dollar value to the bad conduct. I don't particularly fault jurors for that. When you look at jury instructions, there is no guidance about how you should come up with a punitive damages number. The result of this is that the plaintiffs' attorneys will try to give them an anchor, which is often totally irrelevant, such as what the company spent on advertising last year. They are just trying to get a big number out there for jurors to latch onto because there is no methodology for coming up with a dollar value. As a result, you often get ridiculously large awards, which later are reduced by the courts.

RF: How have people's preferences for the consumption of environmental health and beauty changed over time?

Viscusi: There is no question that our valuation of the environment has gone up, and I think much of that has to do with increased wealth. We can afford to enact stricter environmental standards now. When you look around the world, the poorer countries do not have as stringent environmental standards. If you really want to get a sense of what pollution is, you have to leave the United States.

I think the effect of wealth on preferences is interesting from the standpoint that a lot of proposals have been made saying we should not import goods from countries where the job safety standards are not as strong as ours or the environmental standards don't meet our criteria. The net effect of these proposals would be to keep those countries poor. So these protectionist measures would not do us any favors — and they certainly wouldn't do them any favors. Also, we should remember that the United States did not have such a pristine environment 100 years ago, when we had much lower per-capita income. In fact, most of the major environmental regulatory agencies — the Environmental Protection Agency and the Nuclear Regulatory Commission, for instance — were not created until the 1970s.

RF: How has economic analysis affected the way lawyers, judges, and regulators have looked at policy issues over the past 35 years? Do they take economic analysis more seriously now?

Viscusi: Yes, they are heading in the right direction, but they still have a long way to go. In 1985, I testified before Congress on Superfund. I was talking about costs and benefits and one of the representative's questions was: "Costs and benefits? Isn't it just common sense that you want benefits greater than costs?" I was taken aback. I had never heard a congressman say something so sensible. So I think some of the basic ideas have been adopted.

Also, if you look at the curricula of law schools, you can't get through those three years without knowing something about the Coase theorem. In fact, I would say that there are law-and-economics scholars on the faculty of virtually every major law school in the United States today. So some core ideas in law and economics are now routinely taught. In addition, there are some justices on the Supreme Court, such as Justice Scalia and Justice Breyer, who know a lot of economics. And, increasingly, law clerks are coming to their jobs equipped with the basic tools of economic analysis, which judges rely on when doing research for their opinions. So times have changed. I think there is no doubt that the law-and-economics movement has been the most important intellectual development to hit law schools in the last half century.

RF: How, if at all, does recent work by "behavioral economists" — which claims to show that consumers are often irrational and make systematic errors — complicate risk analysis, which generally assumes that people are rational given certain constraints?

Viscusi: I have documented a lot of systematic errors myself. But the fact that you observe systematic errors does not mean that markets necessarily don't work, because not everyone has to understand what is going on for the market to function pretty well. Also, the fact that you find an error doesn't mean it's a big deal. You can construct a lot of these experiments that have nothing to do with the real world and find an anomaly, but that doesn't mean actual decisions will be off. In addition, the fact that there is an error doesn't mean it's a market failure and the government needs to do more. Sometimes, it means the government needs to do less. One error is that people tend to overestimate small risks. If that's true, they won't be taking enough small risks. So it doesn't mean you want to regulate some things more stringently. In fact, you may want to regulate them less stringently.

One anomaly that I find interesting is that people are really adverse to ambiguous losses. This has an effect on government policies. Instead of looking at the mean risk associated with something, they look at the worst-case scenario. So if it's an imprecisely understood risk, they focus on how bad it possibly could be, rather than how bad it probably will be. This is true throughout the federal government, where the upper bound is used as the risk number. This really distorts all the risk numbers coming out of the government. An example is the Superfund cleanup efforts. What's the concentration of the chemical at the site? They take the upper bound for that. What's the exposure level at the site? They take the upper bound for that. What's the frequency of exposure? They take the upper bound for that. So they multiply four or five upper-bound numbers, which vastly exaggerates the estimate by the time you are done.

RF: In your view, is there a role for normative analysis when working on issues involving risk? For instance, should we place some value — even if, ultimately, it is merely symbolic — on the notion that people have an obligation to behave safely and that legislators and regulators have a duty to try to make them act in that manner?

Viscusi: I have some limited sympathy for that type of argument. We do care about individual health. That's why we spend a lot of money on various government health-care programs. We don't want our fellow citizens to be ill. So that's a legitimate concern. On the other hand, let's say I decide that I don't think anyone should endanger his life by working in a steel mill. In that case, you are imposing your own preferences on someone else and in the process lowering his perceived welfare. That's a type of paternalism that I think is really hard to justify.

When it comes to these types of things, most people really don't understand economics. I was at a conference that was attended by one of the leading health policy experts in Europe — he's even knighted — and he said that we should give health care to everyone. My response was: Would you require cars to be as safe as they possibly could be? And he said yes. But that would mean that even the cheapest cars would cost a lot of money and many people would not be able to buy them. You can't just wave a magic wand and eliminate risk for free, which is what people want to do. If you restrict people from taking jobs, if you restrict the foods that they eat, if you place limits on how much they can weigh, all of these things will reduce their welfare as they perceive it. The proper role of government is to give people enough information so they can make reasonable decisions, and after that step aside and allow them to make their own choices.

RF: There are some law schools where economic analysis is an important part of the curricula and many economics departments where one can work on similar issues. What is the market that you wish to satisfy with the new Ph.D. program in law and economics at Vanderbilt?

Viscusi: Even though most law schools teach law and economics, as we discussed earlier, they don't teach it at the graduate level. Ours is a much more high-powered program than anything I have seen. Students have to take micro theory and the standard econometric sequence and then we bolster it with additional behavioral techniques and more empirical methods. So our students are going to be better geared up, technically, than the typical J.D./Ph.D. student, who takes the J.D. courses in the law school and then is sent over to the economics department to complete those courses. So the two programs are not really integrated in a meaningful way, and we attempt to bridge that gap with the program at Vanderbilt. Our first entering class will arrive this fall, and within six years they will leave with both a J.D. and a Ph.D. We want our students to be skilled enough to get jobs in economics departments, but the program is really designed to place graduates in teaching positions at law schools where they can apply the integrated skill set that they have acquired.

RF: Which economists have influenced you the most?

Viscusi: The people I am going to mention are the three members of my dissertation committee. And I picked them for a reason, so it wasn't just by accident that they had a big influence. The chairman of the committee was Kenneth Arrow. Even though I am not the same type of theorist that he is, he sets a very high standard and is an inspiration. Also, he did a lot of work on risk and uncertainty that I thought was clever and innovative at the time. Another member was Richard Zeckhauser, who was also my undergraduate thesis adviser. I have worked with him over basically my whole career and we continue to co-author papers. The third member was Richard Freeman, a labor economist, who continues to do inventive things with data and is always moving on to new and interesting topics. **RF**

Opening the Vault

BY CHARLES GERENA

Black-owned banks have a long history of providing financial services to underserved communities, but how important are they in today's market?

Robert Johnson, America's first black billionaire, decided to get into the financial services industry last year. He purchased a majority stake in a struggling minority-owned bank in Orlando, Fla., infusing millions of dollars into the institution to position it for a future national expansion.

Named Urban Trust Bank, the firm will target urban residents who don't already have accounts and have limited access to capital, particularly blacks. In addition to using capital from Johnson and his network of CEOs, bank officials want to join the Treasury Department's Minority Bank Deposit Program, which encourages corporations, federal agencies, and state and local governments to put their savings in banks owned by women and minorities.

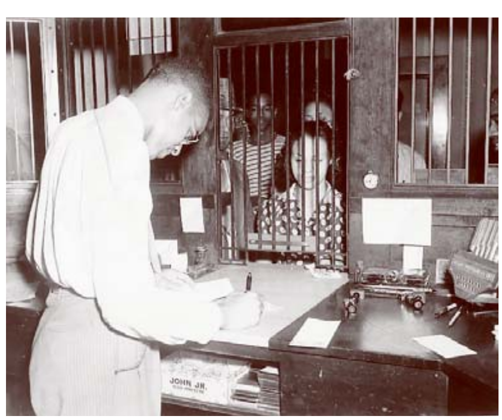
Still, the bank's officers make it clear that Urban Trust isn't all about the black community. They want to make money by attracting customers of all races and backgrounds. Single mothers and people with questionable credit records will be served alongside minority students and small-business owners applying for loans.

More than a century ago, the economic realities imposed by segregation required blacks to pool their resources and help each other. Black-owned banks are part of this long tradition. During their peak between the end of the Reconstruction era and the start of the Great Depression, more than 130 of these institutions opened for business, providing capital to black entrepreneurs and prospective homeowners at a time when it was expensive or impossible to get elsewhere.

Not surprisingly, most of these banks were in the South, where 90 percent of blacks lived. The Fifth District accounted for one-third of the total, with Virginia having the most of any state.

Today, there are only 44 "black-owned banks," where African-Americans own at least 51 percent of the voting stock. Three other banks have minority board of directors and focus on the black community. Again, most operate in the South. They commanded more than $6 billion in assets in 2006, less than 1 percent of the total capital held at commercial banks.

Whether there is still a need for financial institutions operated by blacks for blacks has been hotly debated. The United States is more racially integrated, but the challenges of serving African-Americans and other unbanked residents in poorer communities remain.



By the 1950s, Mechanics and Farmers Bank had become a fixture of "Black Wall Street" in Durham, N.C. The black-owned bank celebrates its 100th anniversary next year.

PHOTOGRAPHY: COURTESY OF MECHANICS AND FARMERS BANK

A Penny Saved, A Penny Loaned

In the 19th century, banking activity was fairly widespread. "Capital accumulation in the Southern financial sector in the antebellum period compared favorably with Northern accumulation on a per-capita basis," notes Howard Bodenhorn, an economist at Lafayette College who has written extensively about banking history.

As for blacks, some of those who were enslaved in the South managed to participate in the economy on a limited basis. They sold their services on occasion, and a few established small businesses on the side.

Their credit needs were filled by blacks who accumulated enough wealth to buy their freedom. These informal bankers collected other people's savings and used the funds to make small loans. Also, mutual-aid societies pooled people's resources to offer a variety of services, including financing for black entrepreneurs.

Meanwhile, free blacks in the North created similar institutions to provide banking and other services to each other. As the nation's industrialization and westward expansion increased the overall demand for capital during the mid-19th century, however, they realized other sources of credit were needed. Church and business leaders in the black community gathered in New York City in 1851 to discuss, among other things, the formation of a mutual savings bank. They believed the bank would help blacks buy their own homes and start businesses, as well as encourage thrift. Black leaders talked about this idea again in New York and in Philadelphia four years later. But the bank was never created. The tensions leading to the Civil War in 1861 probably reduced the viability of their plans.

Bodenhorn has his own theories. "Economic logic tells me that blacks just did not have the resources to keep a bank going," he explains. "Banks prosper when they can tap into two markets — wage earners who need a depository and entrepreneurs with potentially lucrative projects." Black communities often had neither. "Workers earning barely more than subsistence [did not] provide a reliable source of deposits, and black entrepreneurial projects were not the most promising of the available set of projects."

During the Civil War, the federal government established banks administered by Union generals as a safe place for black soldiers and refugee camp workers, as well as emancipated slaves, to park their money. Two of these banks opened in 1864, in Beaufort, S.C., and Norfolk, Va., where large numbers of black soldiers were stationed.

After the war, hundreds of thousands of dollars sat in these banks unclaimed — many depositors either had died or had returned home without closing out their accounts. Government and military officials decided to redirect this capital into a federally incorporated institution called the Freedmen's Savings and Trust Company in 1865. The bank eventually opened more than 30 branches — mostly in Southern states — and accumulated about $3 million in deposits.

The Freedmen's Bank was supposed to help newly emancipated blacks. Instead, it didn't survive the banking Panic of 1873, when dozens of private, commercial banks failed following the bankruptcy of a prominent railroad financer. The Freedmen's Bank went belly up a year later.

Some historians blame the failure on a lack of accountability and mismanagement. Others argue that the bank was too cautious and focused on protecting its funds rather than earning a profit. Branches sent their deposits straight to the bank's headquarters to be invested in government securities, and weren't permitted to make loans until 1870.

Left Out

The failure of Freedmen's Bank left many blacks distrustful of the white banking community, especially since the bank was established and managed by whites and hired black advisers and employees later in its history. Combined with the Panic of 1873, it undermined the confidence of blacks in the nation's financial system.

Yet there was arguably pent-up demand for capital. The Reconstruction era, spanning from 1865 to 1877, gave blacks a taste of civil and economic freedom. In later years, however, banks imposed higher interest rates on black borrowers, or simply rejected them. In the 1880s, "Jim Crow" laws in Southern states formalized the segregation of whites and blacks.

Aside from blacks not being welcome in mainstream banks because of the color of their skin, there may have been economic reasons why they generally were not attractive customers. "Deposits by African-Americans tended to be small and not always cost-effective," noted Nicholas Lash, a finance professor at Loyola University Chicago, in a 2005 journal article. "Also, loan profitability would be constrained by the small scale, illiquidity, and high risk of the loans." Still, there are accounts of blacks with good credit and a solid banking history being turned down for a loan.

To fill this gap, black churches, fraternal organizations, and benevolent societies began supporting the formation of banks in the late 1880s. Individuals also started industrial loan companies, building and loan firms, and credit unions. Thanks in part to these institutions, black business and homeownership rates continued to rise after the Civil War despite many social and legal barriers.

The two earliest examples of black-owned banks were in the Fifth District. The United Order of True Reformers obtained the first charter for a black-owned bank in March 1888 from the Virginia General Assembly. When the Richmond-based bank eventually opened for business in April 1889, it financed various enterprises, including a chain of grocery stores that operated in Virginia and Washington, D.C. But a series of bad loans and an embezzlement scandal eventually forced the state to close the bank in 1910.

Capital Savings Bank in Washington, D.C., opened for business in October 1888. The firm paid dividends to its shareholders and did well in its early years, but it also succumbed to mismanagement 14 years later.

Bad judgment, often attributed to a lack of experience in banking, contributed to the short life spans of a large number of black-owned banks during this period. Many firms either closed their doors or merged with other banks within five to eight years.

Economist Howard Bodenhorn says there are other explanations why black-owned banks were smaller and less profitable. "[Blacks] had no legacy of banking," he offers. "They had no substantial collateral [and] earned low wages. A far smaller percentage of blacks were literate."

Along with these financial challenges came a period of continued volatility and distrust in banking. In addition to the Panic of 1873, two major crises struck the industry, the first in 1893 and the second in 1907. Banks of all stripes would close their doors for weeks at a time to head off runs on their deposits.

Black-owned banks suffered alongside their peers during the Great Depression, probably more so because they were located primarily in minority neighborhoods and served minority clients, says Harold Black, professor of financial institutions at the University of Tennessee. "In [black] communities, their patrons felt the effects of unemployment first and, probably, harder than the population at large," he explains. "The Great Depression really set back black enterprise."

At the same time, blacks started migrating from the South to Northern states where economic and social opportunities often were better. This created new customers for the latter region, but drained a significant supply of deposits from the former.

Some banks were strong enough to survive this challenging period. St. Luke Penny Savings Bank was founded in Richmond in 1903 by a black fraternal organization and managed by Maggie Walker. The bank offered low-cost mortgages to blacks and eventually expanded its services and influence beyond the black community, serving as a depository for Richmond's utility and tax payments. It absorbed two of the city's black-owned banks during the 1930s to become Consolidated Bank & Trust, which is still operating today as a subsidiary of Abigail Adams National Bancorp.

A Period of Transition

By the 1930s, only nine black-owned banks were still around. Just five new banks organized between 1934 and 1951, according to one estimate, and many more shut down.

Harold Black says several factors contributed to a decline in the growth of economic well-being of blacks after the Depression and through the 1960s. The Federal Housing Administration supported racially restrictive zoning ordinances and covenants on homes, resulting in a drop in black homeownership. Labor unions worked to improve the wages of its members, but excluded blacks.

Aside from these issues affecting their customer base, black-owned banks faced a painful transition following the civil-rights movement of the 1960s. The racially segregated business districts that had created a captive market for banking services began to disappear. The banks that remained in these districts had to compete for customers with the mainstream banking industry for the first time. Additional competition came later when the Community Reinvestment Act (CRA) was enacted in 1977 to encourage lending to low- and moderate-income communities.

In the view of William Bradford, a professor of business and economic development at the University of Washington, these additional pressures pushed black bankers to improve their customer service, broaden their solicitation of deposits, and develop competitive advantages. Few were able to do so, however. "A number of them were bought out or failed," Bradford says.

Black banking did experience a resurgence during the 1970s. There were still underserved markets to tackle. Some mainstream banks discriminated against blacks moving into white suburbs. Others allegedly didn't fund development in poor and minority communities, a practice sometimes dubbed "redlining." Also, the civil-rights movement encouraged blacks to empower themselves economically.

Government intervention also played an important role. The federal Minority Bank Deposit Program helped increase the number of deposits at minority-owned financial institutions, while the Comptroller of the Currency pushed for more national bank charters to be awarded to blacks.

Nevertheless, Bradford argues that black-owned banks have become less necessary. In his opinion, the changes that have opened up banking markets to black customers in the last 40 years have reduced the demand for such institutions.

Where's the Market?

Supporters of black-owned banks and others contend that redlining and similar forms of discrimination against black borrowers still occur, despite CRA requirements. Various studies of whether such discrimination exists have yielded only mixed results.

Finance professor Nicholas Lash of Loyola University Chicago says that there is no conclusive evidence of continuing discrimination against black borrowers. "People on each side of the divide would say, 'Of course the evidence is conclusive.' I'm still agnostic about it."

In general, economic theory suggests that discrimination isn't a rational choice because it leaves money on the table. Some bankers may have a "taste for discrimination," as economist Gary Becker of the University of Chicago has argued, but in a competitive market that preference will cost them.

Further, Lash and others argue that the role of black-owned banks in community development is limited. "There may be possible market imperfections, but are [the banks] large enough and do they have enough of a presence to have a significant impact on urban poverty?" Lash questions. His view is that black-owned banks don't appear to be efficient and profitable enough to have an effect, nor do they exist in sufficient numbers.

Academic studies of black-owned banks in recent decades have found that various aspects of their markets make it difficult to be profitable. Deposits and loans tend to be small. Since a transaction can entail the same costs regardless of its size, this makes per-unit transaction costs at black-owned banks higher.

The amount of money kept on deposit in black-owned banks is also more variable and the volume of transactions is higher. Economist Harold Black at the University of Tennessee says that, on average, customers hold money in their accounts for relatively short periods. Rather, they deposit their paycheck and quickly start withdrawing funds to pay their bills.

In order to ensure that they have sufficient resources above their reserve requirements to cover transactions, black-owned banks tend to keep more of their money in liquid assets like U.S. government securities. The drawback to these investment vehicles is that they yield lower rates of return compared to corporate bonds or loans.

"Banks always have to balance between keeping some degree of liquidity and making higher profits on loans," Lash adds. "Other things being equal, the more volatile your source of funding, the more liquid [you have to be] and the less lending you can do."

Finally, black-owned banks make loans where the return tends to be lower and more uncertain. Combined with receiving lower yields on their investments and higher costs, this has made it very difficult to make money. A 1988 study by Robert Clair, formerly of the Dallas Fed, disputes this conclusion, finding that loan losses and operating expenses of black-owned banks are no different from their nonminority competitors in the same neighborhood. (Clair did find, however, that the return on assets of these banks was lower.)

Microlenders that cater to the poor as an alternative to traditional banking have found ways to significantly reduce loan defaults, Lash says. Group lending uses peer pressure and monitoring to reduce the risk of default, while progressive lending involves giving small loans initially and increasing the size of loans as borrowers demonstrate their ability to repay. Still, microlenders tend to struggle to turn a profit and are often heavily dependent on charitable donations.

An Uncertain Future

The continued viability of black-owned banks will depend on meeting the goals of any business — to provide a product that people want at a price they can profit from. But how?

Black bankers say they take the time to work with customers who may have less financial sophistication. "We see education as part of our mission and purpose," says Kim Saunders, former president and CEO of Consolidated Bank & Trust in Richmond. Saunders recently took the helm of black-owned Mechanics and Farmers Bank, which opened in 1908 in Durham, N.C. "When we sit down with a customer, we are going to explain why we are looking for what we are looking, and why it is important," she adds. "It is more hand-holding."

Similarly, black-owned banks aim to have strong, long-term relationships with their customers. In turn, as various studies on banking in general have found, strong relationships provide additional market knowledge that helps banks manage their risks.

"As the industry changes and we add products and services to remain competitive, we are able to go to a specific customer and identify what might enhance their business because we know them," Saunders notes.

But can't any community-oriented bank do these things? Saunders says black-owned banks have chosen to stay in the heart of inner cities while other banks focus on the suburbs and the fringes of cities. "That positions black banks to serve a pivotal role in the development that is going on in a lot of the urban cities across the country." Also, they may be able to develop and nurture relationships with their customers more easily than predominantly white-owned and -managed banks. Lash says it's in the gray areas where the riskiness of a loan isn't clear that black-owned banks may have an advantage. "You're not just looking at the financial statements. You talk to [borrowers] and get a sense of [their] character and reliability," he says.

However, the banking industry in general is more racially diversified than it used to be. "A lot of banks in the past didn't hire black lending officers. Now they do," William Bradford says. Relationship building had been something that set black-owned banks apart from their competition, but now major banks are also forging these relationships by hiring officers and representatives "who fit the ethnic profile of their customers."

Competing against banks large and small, as well as other businesses targeting the poor and unbanked, black-owned banks will need to find a place in the larger marketplace in order to survive. So far, a few have positioned themselves successfully, but this is relatively rare. "You need to be socially valuable and economically valuable in order to prosper and grow over time," Bradford notes. "It is a difficult position." **RF**

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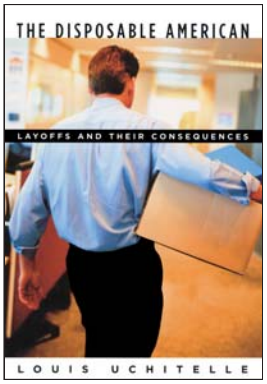


BookReview

Job Security No Longer Job One

THE DISPOSABLE AMERICAN: LAYOFFS AND THEIR CONSEQUENCES

BY LOUIS UCHITELLE
NEW YORK: A. KNOPF, 2006,
283 PAGES

REVIEWED BY CHARLES GERENA

Here is a startling statistic: Between 2003 and 2005, the Bureau of Labor Statistics counted 8 million workers who were displaced from their jobs. They weren't fired for sleeping on the job or misspelling the CEO's name on a press release. Their plant or office closed or relocated, or their position was eliminated because there wasn't enough work for them. Skilled professionals who thought they were safe from outsourcing and layoffs are being cut loose, putting them in the same predicament as blue-collar workers who have been forced to deal with declining employment in many parts of the manufacturing sector.

In *The Disposable American: Layoffs and Their Consequences,* Louis Uchitelle chronicles how layoffs have become a fact of economic life and argues that this lack of job security ultimately hurts everyone. Uchitelle, a business and economics reporter for the *New York Times*, blends narrative journalism with economic analysis to tell a compelling story.

The author challenges three arguments — what he calls "myths" — that support the use of layoffs. Number one on his list is that layoffs have an economic payoff. Although the unemployed can experience painful transitions in the short run, the economy will be stronger in the long run as a result of having a labor force that can more easily respond to market changes. In turn, more people will be employed and earn higher wages. Uchitelle argues that layoffs have only begat more layoffs, undermining the bargaining power of workers.

The second myth is that workers have the power to save themselves. If they are laid off because their skills have declined in value, they can acquire new skills to raise their marketability. Uchitelle contends that the problem isn't a lack of workers with the skills that are needed; it's a lack of good-paying jobs to reward those skills.

However, one could easily point to industries such as health care where good people are hard to find. Though he bemoans inadequate funding for retraining programs to help transition workers into new fields, Uchitelle likely underestimates the existing demand for skilled workers across many sectors of the economy.

The last myth tackled by the author is that the effect of layoffs is purely and narrowly economic. Uchitelle argues that layoffs also have a psychological cost that ultimately hurts companies. They "chip away at human capital," as he puts it. Productivity declines among the workers who remain at the company, as well as among those who are displaced and find other jobs. In addressing this myth, Uchitelle makes his strongest indictment of layoffs. He asserts that people who feel secure in their jobs are better workers — for example, they are less likely to object to workplace changes that require new tasks or longer hours. Also, the author vividly chronicles the psychological damage of layoffs by following several people in their post-layoff careers.

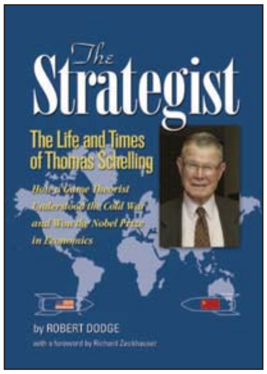
Much of the descriptive content in *The Disposable American* is on the mark, particularly his overview of the "golden age" of job security from the late 1880s to the late 1970s. From railroads to retailers to manufacturers, firms recognized the value of long-term employees. These workers had better knowledge of a company's systems and procedures, and they were motivated by a desire to move up the corporate ladder, making them easier to manage within a complex organization. Firms offered pensions and health insurance for the first time to retain employees.

The book's analysis, however, is often less sound. Even when Uchitelle goes astray, his claims can spark discussions of important issues. For example, he casts a negative light on the ability of capital to move easily across state borders when, in fact, this trend has benefited the economy in many ways. But this does raise a valid question: Is physical capital significantly more mobile than human capital? If so, then companies can easily chase cheaper labor costs, giving them the upper hand in negotiating with workers.

Uchitelle argues that economic development incentives used by state and local governments to lure companies to new locations contribute to corporate migration. He suggests that Congress ban all such incentives. Why subsidize the movement of economic activity — displacing workers in the process — when those decisions might better be left to the market?

Uchitelle spends the last chapter offering other solutions to mitigate the pace of layoffs. He will win points with economists for not advocating the propping up of moribund industries to preserve jobs. But his proposals for additional government intervention to ostensibly protect workers from today's changing economy — such as suggestions to increase the minimum wage and create mandatory severance packages — would raise objections from those who would point to continental Europe's rigid labor market policies to show the damage such measures can cause.

Still, *The Disposable American* forces the reader to, at least, reevaluate the role of layoffs in today's economy. His message is clear: We as a society need to place more value on taking care of workers whose displacement was due to economic changes beyond their control. **RF**



The Not-So-Dismal Science

THE STRATEGIST: THE LIFE AND TIMES OF THOMAS SCHELLING

BY ROBERT DODGE
HOLLIS, N.H.: HOLLIS PUBLISHING, 2006, 244 PAGES

REVIEWED BY AARON STEELMAN

It took many economists by surprise when Thomas Schelling was awarded the Nobel Prize (along with Robert Aumann) in 2005. Not that he was undeserving. Far from it. His contributions have been numerous and influential. But many people believed that time had passed him by — if he were going to win the award, it would have happened many years ago. In 1994, the Nobel committee had decided to award the prize to three game theorists, yet Schelling was not included. This despite the fact that his work, while not highly technical by today's standards, had employed game theory to great effect.

Schelling, who spent most of his career at Harvard University before coming to the University of Maryland in 1990, always asked big questions. And no question was more important for most of the latter half of the 20th century than how to avoid nuclear war. Many thought it was inevitable that the United States and the Soviet Union (or one of its client states) would eventually engage in such a confrontation. But, thankfully, it never happened.

To Schelling, this was not as amazing as many thought. In his work on deterrence theory — which occupied much of his attention in the 1950s and 1960s and was the topic of his Nobel address — he concluded that the Americans and Soviets were actually quite interdependent. What's more, their leaders were generally rational and understood that a nuclear attack would be catastrophic to both sides. As a result, the "nuclear taboo" was never broken, though other countries have subsequently come close to crossing that line. How nonstate actors will act should they acquire those weapons also remains to be seen. One optimistic scenario holds that insofar as terrorists wish to eventually "become the government," they will refrain from using nuclear weapons in an attempt to earn international credibility and recognition. But this remains speculation.

In his new biography of Schelling, Robert Dodge does an admirable job of describing accurately and clearly Schelling's contribution to Cold War diplomacy — both as an academic and as a policy analyst and adviser. Likewise, he concisely explains Schelling's contributions to other topics once thought beyond the purview of economists, such as racial segregation and self-command, the latter of which, like much of Schelling's work, had a connection to his own real-world experience.

Schelling had tried unsuccessfully multiple times to quit smoking. He knew the difficulty of overcoming addiction. But he did not think it necessarily required third-party intervention. Addicts could help themselves. He argued that the problem could be modeled as a fundamental conflict between the "present self" — who badly wants to quit smoking, drinking, or overeating — and the "future self" who will be tempted to continue to engage in those activities. How to get those two selves in line? By understanding that the temptation to revert to old habits will be strong and to implement rational, purposeful strategies to avoid doing so.

One type of strategy is to remove yourself from situations that you know will be challenging. For instance, if you are trying to quit smoking, don't go to places, such as bars, where many other people will be smoking and where the desire to light up will be hard to resist. Another type of strategy is to commit to penalizing yourself if you deviate from your plan. "One suggested commitment is to make a large donation to a political candidate you despise; write a check to the Republican/Democratic Party or whomever you find offensive, and arrange for it to be out of your control that the check is sent in your name if you fail," Dodge writes. Yet another type of strategy is to simply disable yourself. A college student who doesn't "trust himself to stay in and study on the weekend for an important exam could put his keys in the mail to himself on Friday, so they'd be delivered to him on Monday."

Dodge, a former student of Schelling's at Harvard's Kennedy School of Government, has divided the book into 27 relatively short and highly readable chapters. The book also includes an informative foreword by Schelling's long-time colleague Richard Zeckhauser, who aptly writes: "Schelling is the high priest of economists who draw lessons from life. Just as Leonardo da Vinci drew remarkable figures of the human anatomy, Schelling sketches equally remarkable portraits that detail the anatomy of human interactions."

This, I suspect, may have been one of the reasons that Schelling had to wait so long to receive the Nobel Prize. His insights, while profound, are presented in such a highly straightforward fashion, stripped of unnecessary jargon and mathematics, that they often strike the reader as almost matter-of-fact. This perhaps led to his work being insufficiently appreciated by the profession at large. But to his students, colleagues, and friends, Schelling's penetrating mind, his almost infectious intellectual curiosity, and his easy demeanor have been impossible to ignore — all of which become clear to the reader of *The Strategist: The Life and Times of Thomas Schelling.* **RF**

District Economic Overview

BY MATTHEW MARTIN

Fifth District economic conditions strengthened somewhat during the fourth quarter as continued growth in the District's service sector outweighed lingering weakness in the region's housing markets and a further softening in manufacturing activity.

Labor Markets Remain Sound

Outside of housing and manufacturing, reports on the District labor markets were generally favorable. District job growth remained strong as continued expansion in the region's service sector helped propel payroll increases over the final three months of 2006. Overall, District payrolls expanded 1.7 percent during 2006, matching the national pace over the period. Employment gains were particularly solid in professional and business services, leisure and hospitality and educational and health services with payrolls in each sector posting increases of 2.5 percent or more since the end of 2005.

The Richmond Fed's services sector survey also indicated a strengthening during the fourth quarter — especially among nonretail firms. The average index numbers for nonretail revenues and anticipated demand for services during the next six months increased from their third-quarter levels while the index number for employment dipped slightly, but remained solid at 14. Adding to the positive tone for the final quarter of 2006, the District's unemployment rate held its ground at 4.5 percent — down from 4.7 percent a year earlier. Improved income growth accompanied steady employment performance across the District in the fourth quarter. Income growth in the District had lagged that of the United States for most of 2006, but a sharp pickup in real income growth during the fourth quarter brought the District more in line with the national pace.

Fifth District economic conditions strengthened somewhat during the fourth quarter.

Softness Lingers in Housing

District housing markets continued to soften over the final three months of 2006. The total number of residential building permits issued districtwide was down 16 percent compared to a year earlier, with the largest declines in the District of Columbia, South Carolina, and Virginia. Weakening in housing activity was also evident in the home sales data. Existing home sales across the District fell sharply in the quarter, off nearly 17 percent from a year earlier. In addition, the District posted a sizable increase in the percentage of delinquent mortgages during the fourth quarter of 2006, though the uptick followed a period of particularly low delinquencies. Nonetheless, assessments of housing activity were not uniformly negative. Overall, district home prices continued to post gains during the quarter, though the rate of appreciation fell well short of the previous year's pace.

Manufacturing Sector Slows

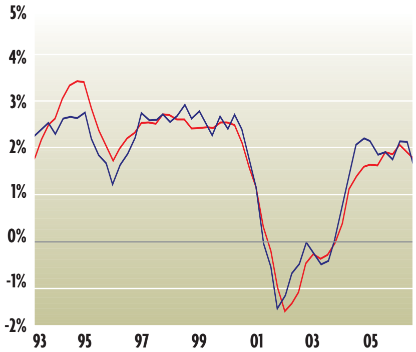
The District's manufacturing sector also weighed on economic growth during the fourth quarter of 2006. Following several quarters of moderate expansion, District manufacturing activity softened over the final three months of the year. The average index numbers for shipments, new orders, and employment all fell during the fourth quarter, pulling the Richmond Fed's composite manufacturing index down to zero. The falloff was particularly stark in new orders, where the average index number from the manufacturing survey fell from 10 in the third quarter to -1 in the fourth quarter.

Additionally, survey participants reported that they began to trim payrolls and reduce hours worked. Regarding prices, survey results indicated that District producers faced higher input costs during the quarter due to a rise in energy prices. But, despite weakening conditions in the fourth quarter, District manufacturers remained optimistic about their future prospects. Survey respondents anticipated that manufacturing activity would expand during the first six months of 2007. At the same time, reports on price expectations continued to suggest moderate growth in both raw material and finished good prices during the first half of 2007. **RF**

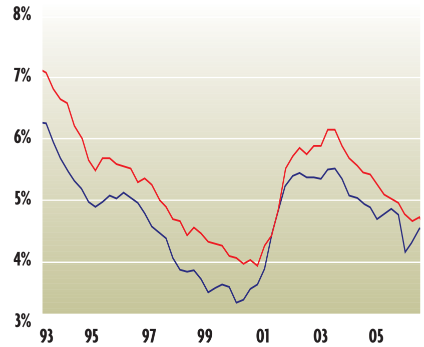
Economic Indicators

	4th Qtr. 2006	3rd Qtr. 2006	Percent Change (Year Ago)
Nonfarm Employment (000)			
Fifth District	13,752	13,680	1.7
U.S.	136,951	136,442	1.7
Real Personal Income ($bil)			
Fifth District	921.6	909.6	3.5
U.S.	9,603.8	9,472.8	3.6
Building Permits (000)			
Fifth District	47.2	54.1	-16.5
U.S.	355.3	437.9	-26.0
Unemployment Rate (%)			
Fifth District	4.5%	4.5%	
U.S.	4.5%	4.7%	

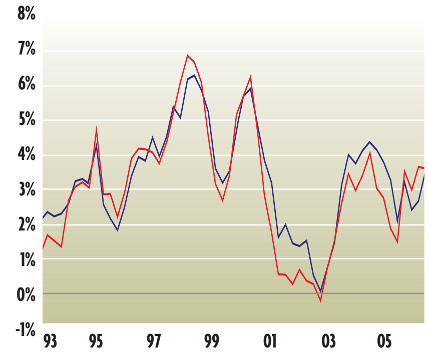
Nonfarm Employment
Change From Prior Year
First Quarter 1993 - Fourth Quarter 2006



Unemployment Rate
First Quarter 1993 - Fourth Quarter 2006

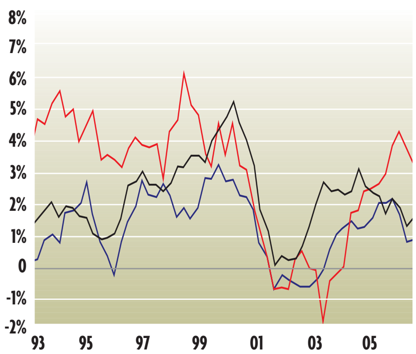


Real Personal Income
Change From Prior Year
First Quarter 1993 - Fourth Quarter 2006



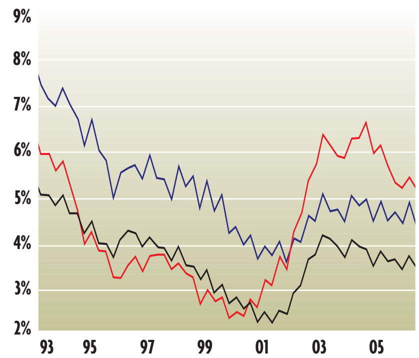
Fifth District — **United States**

Nonfarm Employment Metropolitan Areas
Change From Prior Year
First Quarter 1993 - Fourth Quarter 2006



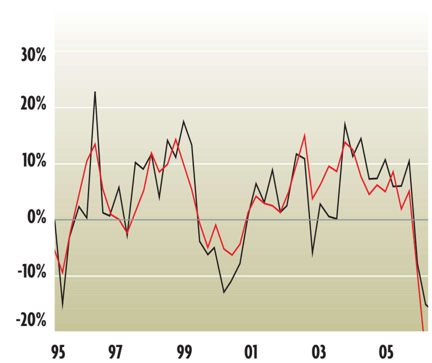
Charlotte — **Baltimore** — **Washington**

Unemployment Rate Metropolitan Areas
First Quarter 1993 - Fourth Quarter 2006



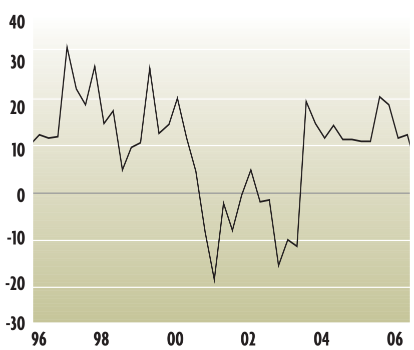
Charlotte — **Baltimore** — **Washington**

Building Permits
Change From Prior Year
First Quarter 1995 - Fourth Quarter 2006

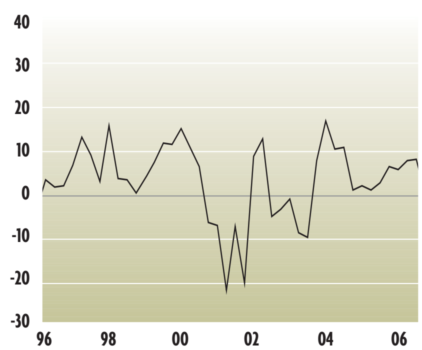


Fifth District — **United States**

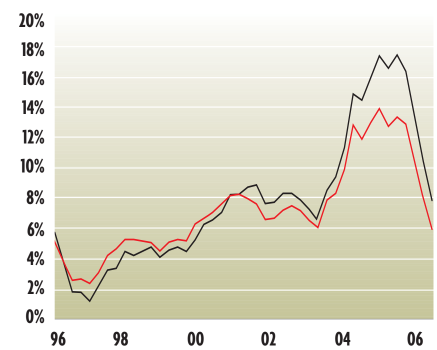
FRB – Richmond Services Revenues Index
First Quarter 1996 - Fourth Quarter 2006



FRB – Richmond Manufacturing Composite Index
First Quarter 1996 - Fourth Quarter 2006



House Prices
Change From Prior Year
First Quarter 1996 - Fourth Quarter 2006



Fifth District — **United States**

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) Metropolitan area data, building permits, and house prices are not seasonally adjusted (nsa); 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: Office of Federal Housing Enterprise Oversight, http://www.ofheo.gov.

For more information, contact Matthew Martin at 704-358-2116 or e-mail Matthew.Martin@rich.frb.org.

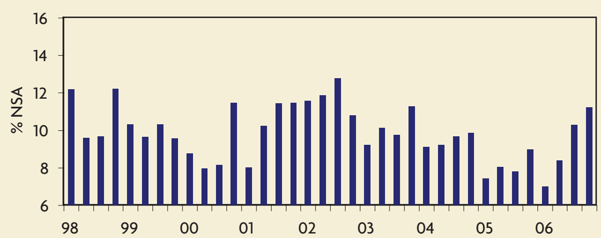
State Economic Conditions

BY MATTHEW MARTIN

District of Columbia

The District of Columbia's economy improved at the end of 2006 as stronger job and income growth trumped weak performances in several segments of the local economy.

Subprime Loans 30 Days Past Due



NOTES: Subprime borrowers are those with low credit scores or no credit history.
NSA stands for Not Seasonally Adjusted.
SOURCES: Mortgage Bankers Association and Haver Analytics

The unemployment rate in the District of Columbia edged up to 6.1 percent in the fourth quarter as solid job growth was overshadowed by an especially large increase in the area's labor force. Nonetheless, payrolls expanded at a 4.5 percent annualized rate in the fourth quarter, behind notable gains in professional and business services and information sector jobs. In addition, the area experienced robust increases in construction employment. Payrolls in the sector grew 5.1 percent during 2006 — the largest year-over-year jump since early 2003.

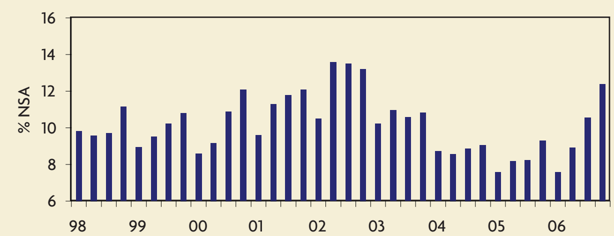
Faster job growth during the fourth quarter of 2006 coincided with stronger income growth. Real income growth in the District of Columbia had lagged the national rate for the first three quarters of the year, but a rapid increase in the final quarter of the year helped to erase the gap. Over the past year, real income in the area increased 3.7 percent, compared to the national rate of 3.6 percent.

Conditions in the District of Columbia's housing market during the fourth quarter were more mixed, however. On one hand, existing home sales in the area fell to their lowest level since 1998. At the same time, growth in home prices strengthened during the period, advancing at a 9.0 percent annual rate compared to a 4.8 percent rate in the third quarter. But not all measures strengthened. On the mortgage front, the delinquency rate for subprime mortgages increased from 7.0 percent at the beginning of 2006 to 11.2 percent in the fourth quarter — a mark still below the 12.8 percent peak recorded in 2002. However, the overall impact of such an increase is likely to be somewhat muted given the fact that the subprime segment accounts for less than 10 percent of all mortgages outstanding in the District of Columbia.

Maryland

Maryland's overall economic performance improved in the fourth quarter of 2006 as job and income growth edged higher. Payrolls expanded at a 1.4 percent annual rate during the period, following back-to-back quarters of little to no employment growth. Increases were particularly pronounced in the state's services sector, headlined by a gain of 3,000 additional jobs in educational and health services. Furthermore, payrolls in leisure and hospitality and professional and business services posted stout increases during the fourth quarter, adding 2,300 and 1,600 positions, respectively.

Subprime Loans 30 Days Past Due



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SOURCES: Mortgage Bankers Association and Haver Analytics

Other sectors of the Old Line State's economy were more sluggish, however. Maryland's already weakened manufacturing sector continued to contract throughout the close of the year as it trimmed payrolls for the ninth consecutive quarter. Additionally, the state's information sector posted job losses for the fourth straight quarter. Nonetheless, Maryland's unemployment rate dropped 0.1 percentge point during the quarter and at 3.9 percent, remained the second-lowest unemployment rate in the District behind Virginia. Firmer labor market conditions in the period were matched by an acceleration in state income growth. Real income grew at a 5.8 percent annual rate — the highest increase among District jurisdictions during the fourth quarter of 2006.

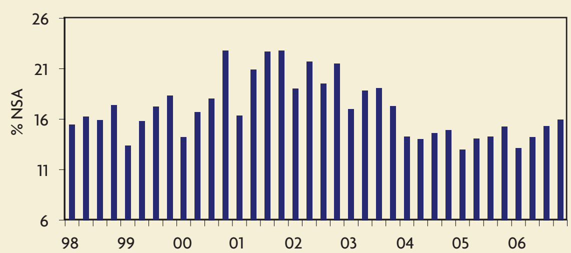
In less upbeat news, Maryland's housing market continued to soften over the final months of the year. Home construction declined sharply in the fourth quarter as building permits fell 8.3 percent from a year earlier. Existing home sales also slumped, moving down 20.8 percent compared to the fourth quarter of 2005. Home prices continued to increase over the final months of 2006, though the pace of appreciation slowed somewhat from the previous period.

Driven by a weak performance in the subprime sector, mortgage delinquencies in the state were elevated as the year closed. The delinquency rate for subprime mortgages, in particular, increased appreciably throughout 2006 and finished the year at 12.4 percent, close to the state's peak level of 13.6 percent set in 2002. Maryland's overall foreclosure rate also edged up during the fourth quarter from 0.46 percent to 0.50 percent.

North Carolina

The North Carolina economy posted a marked improvement during the final quarter of 2006, benefiting from steady job growth and comparative stability in its housing markets. The state's two largest metro areas, Charlotte and Raleigh, continued to add service jobs at a brisk pace, and the drag from manufacturing job losses waned from a year earlier.

Subprime Loans 30 Days Past Due



NOTES: Subprime borrowers are those with low credit scores or no credit history.
NSA stands for Not Seasonally Adjusted.
SOURCES: Mortgage Bankers Association and Haver Analytics

Boosted by a strong showing in the services sector, state payrolls expanded at a healthy 2.9 percent annual rate in the last quarter of 2006. Year-over-year increases in professional and business services and financial services employment of 5.4 percent and 5.2 percent, respectively, were of particular note. In addition, tentative signs emerged that employment levels stabilized in durable goods manufacturing as the sector posted consecutive year-over-year payroll gains during the final two quarters of 2006. Steady payroll growth during the quarter was matched by a sizable expansion in North Carolina's labor force. As a result, the unemployment rate remained at 4.9 percent over the final months of 2006. Adding to the positive tone, real income growth in the Tarheel State advanced at a 5.3 percent annual rate during the fourth quarter, well above the rate posted a year earlier.

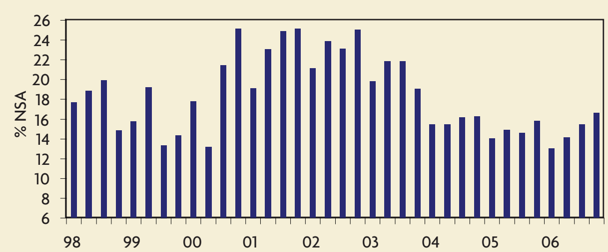
Compared to its District peers, North Carolina's housing markets faired pretty well during the final quarter of 2006. Existing home sales remained somewhat below the level at the end of 2005, but the 1.2 percent drop paled in comparison to the double-digit decreases experienced in other District jurisdictions. Additionally, home prices continued to appreciate at a healthy clip, advancing at a 9.8 percent annual rate during the fourth quarter. Also of note, the pace of new home construction moderated since the end of 2005, though the fourth quarter decrease was only 4 percent.

Stability in residential real estate markets was accompanied by a relatively solid performance in mortgage activity. Mortgage delinquencies rose across the state in the fourth quarter, but the increase was smaller than in other District jurisdictions. A comparatively stronger performance was also apparent in the state's subprime market segment, where delinquencies and foreclosures were both below recent peaks despite slight increases during the period.

South Carolina

South Carolina's economy posted mixed results during the fourth quarter of 2006. Overall job growth was especially robust as payrolls expanded at a 3.7 percent annual rate in the fourth quarter. On the other hand, the Palmetto State continued to be hindered by persistently high unemployment during the fourth quarter.

Subprime Loans 30 Days Past Due



NOTES: Subprime borrowers are those with low credit scores or no credit history.
NSA stands for Not Seasonally Adjusted.
SOURCES: Mortgage Bankers Association and Haver Analytics

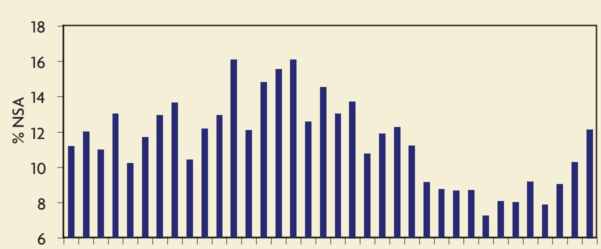
South Carolina's strong employment performance during the close of 2006 was headlined by record increases in educational and health services and trade and transportation payrolls. The leisure and hospitality and financial services sectors also posted solid performances during the fourth quarter, adding 2,400 and 3,100 jobs, respectively. Despite the strong job numbers, South Carolina's unemployment rate inched up to a District-high 6.6 percent as labor force growth in the state outstripped job growth. Sustained weakness in the manufacturing sector also contributed to South Carolina's high unemployment rate, especially in its smaller metro and rural areas. Overall, South Carolina producers cut payrolls by 1.4 percent in the fourth quarter, marking the ninth straight reduction in state manufacturing employment. The textile industry, for example, continued to shed workers throughout 2006, trimming its already reduced payrolls by an additional 13 percent.

South Carolina's housing markets also weakened somewhat during the fourth quarter of 2006, driven in part by a particularly sharp falloff in coastal market activity. Existing home sales in both the Hilton Head and Myrtle Beach metro areas declined notably and accounted for the bulk of the 12.8 percent drop in statewide sales during the fourth quarter. Reports also indicated an acute reduction in median home prices in the coastal markets, while prices in Columbia and other more inland markets moved a bit higher compared to a year earlier. On the mortgage front, South Carolina did not experience a striking surge in delinquencies or foreclosures, including within the much-discussed subprime market. The delinquency rate for the subprime portion of the mortgage market did increase slightly to 16.6 percent at the end of last year, but it remained far below the peak level of 25.1 percent recorded in late 2000.

Virginia

The Virginia economy remained one of the District's strongest during the final three months of 2006. The state posted a fourth-quarter unemployment rate of 3 percent — besting all other District jurisdictions by nearly a full percentage point. Additionally, payroll growth in the Commonwealth maintained its recent steady pace, increasing at a 1.2 percent annual rate during the quarter behind solid gains in professional and business services and trade and transportation employment. Virginia's robust performance in the fourth quarter also included strong personal income growth. Real income levels expanded at a 5.6 percent annual rate during the final quarter of 2006 and registered a 3.4 percent gain from a year earlier.

Subprime Loans 30 Days Past Due



NOTES: Subprime borrowers are those with low credit scores or no credit history.
NSA stands for Not Seasonally Adjusted.
SOURCES: Mortgage Bankers Association and Haver Analytics

Other segments of the state's economy looked more mortal, however. Fourth-quarter data suggested the pullback in housing activity has been a bit more pronounced in Virginia than in other District jurisdictions. Single-family permits fell sharply in the fourth quarter to a level about one-third below that of a year earlier. The decline in existing home sales was quite large as well, falling 26.2 percent from the end of 2005. Virginia also experienced a marked slowdown in home price appreciation during the fourth quarter. While home prices in the state were up 7.7 percent over the course of the year, appreciation levels did not measure up to those recorded in 2005.

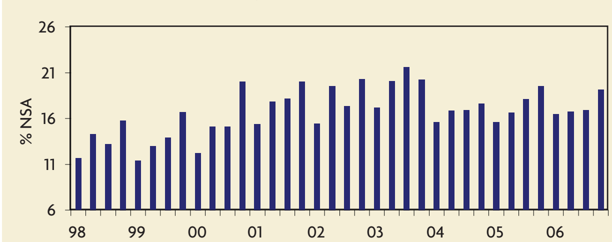
Virginia also saw an increase in mortgage delinquencies and foreclosures toward the end of 2006. Increased stress was particularly apparent in the subprime segment of the market where the delinquency rate swelled nearly two full percentage points to 12.1 percent during the fourth quarter. While that rate was well below the state's recent peak of 16.1 percent in 2000, it represented a sharp increase from levels seen earlier in 2006. The foreclosure rate showed a similar pattern, posting an especially large jump during the close of 2006. The foreclosure rate in Virginia increased from 0.30 percent in the third quarter to 0.37 percent in the fourth quarter — the largest quarterly rise since the late 1990s.

West Virginia

The West Virginia economy improved somewhat during the fourth quarter as strong job and income growth outweighed a continued slowdown in the state's housing market.

Employment growth in the state accelerated over the final three months of 2006 due in part to sizable gains in trade and transportation, leisure and hospitality, and financial services payrolls. The natural resource and mining sectors contributed as well, with high energy prices driving employment to levels not seen since the early 1990s. However, stagnant educational and health services employment and persistent job losses in manufacturing diluted the overall gains a bit. Manufacturing, in particular, continued to weigh on the West Virginia economy as the sector trimmed payrolls for the sixth consecutive quarter.

Subprime Loans 30 Days Past Due



NOTES: Subprime borrowers are those with low credit scores or no credit history.
NSA stands for Not Seasonally Adjusted.
SOURCES: Mortgage Bankers Association and Haver Analytics

Nonetheless, the state unemployment rate inched 0.1 percentage point lower to 5.1 percent in the final quarter of 2006. Reports on income growth also signaled an improvement in state economic conditions during the quarter. The state posted a 3.8 percent increase in real income since the close of 2005 — the second-highest rate among District jurisdictions during that period and the largest gain in West Virginia over any 12-month period since late 2001.

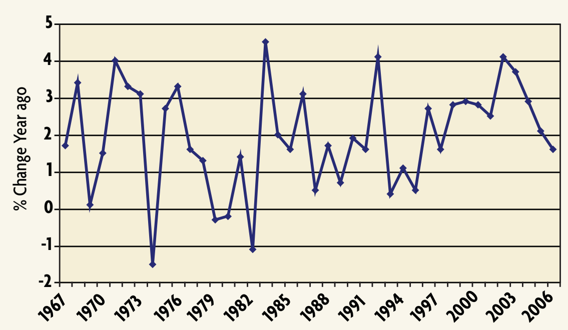
Not all the fourth-quarter economic news in West Virginia was positive, however. Residential real estate activity contracted somewhat during the final quarter of 2006. Existing home sales were down 7.3 percent in the quarter and new building permit issuance dropped even more sharply, posting a decline of 16.1 percent since the fourth quarter of last year. Home appreciation also moderated with median prices registering little to no change in the fourth quarter, following solid growth in the previous period. Additionally, the overall mortgage delinquency rate edged up in the quarter, increasing 1.0 percentage point to 7.4 percent — the state's highest overall rate since the end of 1988. Looking below the surface, the data show that a sizable portion of the increase in fourth-quarter delinquencies came from the prime market segment, rather than the subprime segment, as was the case in other District jurisdictions. The delinquency rate in the prime market rose from 4.3 percent inthe third quarter to 5.2 percent in the final quarter of 2006, reaching its highest mark in several years. Despite the increase in delinquencies, the state experienced a slight reduction in foreclosures as the rate edged down to 1.06 percent during the fourth quarter. **RF**

Behind the Numbers: Productivity

Amid all the headlines about employment, Gross Domestic Product, and income growth, one sometimes has to hunt for reports on what is arguably the most important economic measure — productivity. Without gains in productivity, it would be difficult to sustain growth in employment, output, and income.

The Bureau of Labor Statistics breaks down productivity into two parts: (1) labor productivity, measured in output per hour of labor; and (2) multifactor productivity, which gauges output relative to changes in all of the inputs. Multifactor productivity is sometimes called total factor productivity and attempts to capture the part of growth in output not caused by changes in capital, labor, energy, materials, or purchased services.

Nonfarm Business Output Per Hour



Source: Bureau of Labor Statistics

As a whole, productivity refers to the ability to produce more goods or services at the same effort level. It explains how effectively the resources that businesses take in are churned out. Companies that can increase productivity can generate higher profits, and they can pay their workers more without raising prices. An economy that enjoys productivity growth is one in which people enjoy better products at competitive prices and are generally better off.

The accompanying graph shows labor productivity changes in the nonfarm business sector over the past 40 years. One can easily see how economic booms and busts are associated with improvements or stagnation in productivity. The United States was coming out of a recession in 1983, for example, and experienced dramatic growth in productivity with the economic rebound.

Gains during the last part of the 1990s are generally attributed to advances in information technology. Productivity continued to climb in the early 2000s, despite a recession and pullback in IT investments. Some economists have viewed the resilience of productivity in the early 2000s as partial evidence that the "IT-centered story" of the late 1990s is inaccurate. On the other hand, a recent paper published by the Federal Reserve Board of Governors described thisperiod as encompassing more business sectors than previously thought: "By 2004 the resurgence in productivity growth that started in the mid-1990s was found to have been relatively broad-based and likely still driven by IT."

Recently, productivity gains have been smaller, and analysts disagree about the root cause. Some call it a merely cyclical downturn that will rebound over time. Searching for reasons behind the ebbs and flows in productivity remains one of the most fertile fields of inquiry in economics.

— Doug Campbell

State Data, Q4:06

	DC	MD	NC	SC	VA	WV
Nonfarm Employment (000)	691.9	2,594.7	4,055.2	1,915.0	3,737.0	758.5
Q/Q Percent Change	2.5	1.4	2.9	3.7	1.2	1.6
Y/Y Percent Change	1.1	1.0	2.6	1.8	1.3	1.3
Manufacturing Employment (000)	1.7	135.2	551.6	247.1	285.0	60.2
Q/Q Percent Change	-7.6	-2.4	-1.4	-5.8	-4.1	-3.5
Y/Y Percent Change	-13.8	-2.6	-1.4	-3.5	-2.9	-2.7
Professional/Business Services Employment (000)	155.3	396.6	481.2	219.0	631.9	60.0
Q/Q Percent Change	4.5	1.6	4.4	1.6	2.2	1.8
Y/Y Percent Change	4.2	2.1	5.2	3.2	2.8	0.8
Government Employment (000)	232.7	472.6	674.8	330.2	673.4	145.0
Q/Q Percent Change	-1.3	0.3	1.4	2.0	-1.5	1.5
Y/Y Percent Change	-0.5	0.8	1.1	-0.1	1.2	1.1
Civilian Labor Force (000)	317.8	3,030.8	4,510.4	2,144.8	4,028.2	811.7
Q/Q Percent Change	3.3	1.5	2.8	3.0	1.5	0.3
Y/Y Percent Change	1.4	2.1	2.9	2.0	1.9	1.6
Unemployment Rate (%)	6.1	3.9	4.9	6.6	3.0	5.1
Q3:06	6.0	4.0	4.9	6.5	3.1	5.2
Q4:05	6.1	4.0	5.1	6.9	3.4	4.9
Personal Income ($bil)	28.7	218.9	252.5	112.5	264.1	44.8
Q/Q Percent Change	5.7	5.8	5.3	4.7	5.6	4.7
Y/Y Percent Change	3.7	3.1	4.0	3.6	3.4	3.8
Building Permits	334	5,971	21,547	9,341	9,098	887
Q/Q Percent Change	—	-25.3	-33.6	-63.7	-40.5	-70.6
Y/Y Percent Change	-47.5	-8.3	-4.0	-25.6	-31.6	-16.1
House Price Index (1980=100)	658.76	537.67	331.63	318.38	470.95	233.97
Q/Q Percent Change	9.0	5.2	9.8	11.2	5.5	3.2
Y/Y Percent Change	7.4	9.3	8.3	8.6	7.7	6.0
Sales of Existing Housing Units (000)	8.4	102	235.7	104	127.2	29.3
Q/Q Percent Change	-17.6	-7.3	-1.9	-12.8	-6.5	-7.3
Y/Y Percent Change	-22.2	-20.8	-1.5	-15.3	-26.2	-19.5

NOTES:
Nonfarm Payroll Employment, thousands of jobs, seasonally adjusted (SA) except in MSA's; 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®

Metropolitan Area Data, Q4:06

	Washington, DC MSA	Baltimore, MD MSA	Charlotte, NC MSA
Nonfarm Employment (000)	2,998.3	1,317.1	836.7
Q/Q Percent Change	3.5	4.1	9.6
Y/Y Percent Change	1.5	0.9	3.3
Unemployment Rate (%)	2.9	3.8	4.7
Q3:06	3.3	4.4	4.9
Q4:05	3.1	4.0	4.9
Building Permits	4,553	1,825	5,999
Q/Q Percent Change	-76.2	9.3	-24.8
Y/Y Percent Change	-33.5	-27.6	13.9

	Raleigh, NC MSA	Charleston, SC MSA	Columbia, SC MSA
Nonfarm Employment (000)	284.6	289.9	366.4
Q/Q Percent Change	8.2	5.0	8.7
Y/Y Percent Change	3.6	2.5	2.5
Unemployment Rate (%)	3.8	5.1	5.5
Q3:06	4.1	5.5	5.9
Q4:05	4.0	5.2	5.6
Building Permits	885	1,934	1,366
Q/Q Percent Change	28.0	-9.7	-68.4
Y/Y Percent Change	-2.2	-17.2	-19.4

	Norfolk, VA MSA	Richmond, VA MSA	Charleston, WV MSA
Nonfarm Employment (000)	771.2	634.9	150.6
Q/Q Percent Change	0.8	4.4	0.5
Y/Y Percent Change	1.0	2.1	1.3
Unemployment Rate (%)	3.1	2.9	4.2
Q3:06	3.5	3.3	4.5
Q4:05	3.5	3.4	4.1
Building Permits	1,998	1,487	52
Q/Q Percent Change	143.2	-56.5	-67.7
Y/Y Percent Change	-26.5	-29.7	-30.7

For more information, contact Matthew Martin at 704-358-2116 or e-mail Matthew.Martin@rich.frb.org.

OPINION

In Praise of Theory

BY KARTIK B. ATHREYA

Here is an interesting story: The pace of personal bankruptcies rose quickly during the 1990s, even as the overall economy fared well. What might we conclude from these facts? One possibility is that improvements in financial intermediation have made credit-granting decisions easier and have led to greater borrowing by risky groups previously denied credit. Another is that nothing has changed in the lending industry, yet households anticipated rapid future income growth. This led them to borrow, but for those whose income failed to grow as expected, default proved useful, leading overall bankruptcy rates to rise. Still another explanation is that neither lender behavior nor income expectations have changed, but instead that there is no longer any "shame" in defaulting on debts.

Each of these explanations may partially account for the facts, and some may fail altogether. But interpreting historical behavior and predicting future patterns first requires a theory about how consumers make financial decisions. What are people considering when they choose how much to spend, how much to borrow, and how much to save? By themselves, the data tell us little.

Modern economics develops theories in the form of mathematical models of household and firm decision-making in which their collective behavior is required to be consistent with the feasibility requirements imposed by the model. This is known as an "equilibrium" approach.

Equilibrium analysis may be clearly contrasted with an alternative still prevalent in consumer finance, one that places far less emphasis on modeling explicit decisionmaking. The latter approach instead relies on summarizing observed features of the data, usually using regression analysis, and treating the correlations as being informative for the effects of policy.

Why should we not simply stare at data, perform a purely statistical analysis, and hope to learn from the results? Ever since the publication of Robert Lucas' seminal work in the 1970s, economists have become sensitive to the pitfalls of using history to learn about the effects of future policies, especially those that are novel and far-reaching. The so-called "Lucas critique" pointed out that many relationships between economic variables which appeared structural, or immutable, actually were the products of past policies and thus subject to change as policies changed. Lucas' work forced economists to push expectations to the forefront of consumption research.

The argument is simple and powerful. If what we see in the data is to be usefully interpreted as the outcome of purposeful decisionmaking by the principal actors in the economy, then both current policies and expectations about future policies will influence those actors' decisions.

Consider a football game. If painstaking data analysis from, say, the 1990s reveals that the instances in which teams gained the most yardage were on passing plays, would it make sense for teams to drastically increase their number of passing plays? A little reflection suggests that it probably wouldn't. Most opponents would alter their behavior to defend against this change in strategy.

While seemingly unrelated to economic policy analysis, this analogy teaches us that, one, the data are an outcome of optimization under a given policy regime, and, two, when policies change, so might behavior. This is a potentially serious problem for empirical work in macroeconomics. After all, in most cases we do not have the luxury of running highly controlled experiments on citizens to learn how they would respond. Instead, we must be clever and insist that our models match observed behavior under current policy. Consequently, to predict how policies would alter outcomes, we must explicitly reanalyze household decisionmaking under a proposed policy, and then compare the results. The outcome of this process thereby overcomes the thorny problem of using data to learn about the effects of proposed, but historically novel, policy changes.

In contrast to a purely statistical analysis, an equilibrium model is advantageous because it will deliver the full range of decisionmaking for all conceivable situations that may face households and firms. In turn, we can learn more precisely what drives people to borrow, or save, or file for bankruptcy. We can also have a clearer view of how they might change their behavior if we changed policy.

So we return to the initial question: Why have consumer default rates risen? Though the data alone may point to other culprits, equilibrium analysis suggests that improvements in lending technologies are a promising candidate for explaining both borrowing and default behavior over the past two decades, while mere reductions in "stigma" are not able to match the data. In other words, it's not shame that drove the rise of bankruptcies, as neat of an explanation as that would have been. Before you can understand the facts, you first need a good theory. **RF**

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NEXT ISSUE

Public Choice

For much of the 20th century, social scientists modeled politicians as if they always worked in the public interest. By contrast, the theory of public choice uses economic principles to analyze the democratic process. When introduced in the 1950s, the model was revolutionary: It explained how politicians were self-interested and voters rationally ignorant, and thus how economic policies that benefited the few at the expense of the many were adopted. Now an economist at George Mason University — the center of public choice orthodoxy — turns that model on its head. Most voters, he says, hold irrational economic views and often want the bad policies that legislators deliver. Can that be right?

Credit Markets

Derivatives. Swaps. Securitization. Credit market innovations like these should help make the financial system more efficient and more resilient. But many ask whether these devices truly make markets more stable. Are they, as famed investor Warren Buffett sees them, "time bombs" which carry dangers that are "potentially lethal"? Some of the nation's leading experts on credit markets recently gathered in Charlotte to discuss this very question.

Tenure

Today, 62 percent of faculty jobs in American universities and colleges are off the tenure track, many of them filled by part-time instructors. Does tenure remain the most efficient way to nurture research and disseminate ideas to students, a public good crucial to society's collective knowledge? Or does the tenure system need an overhaul?

Banking and Commerce

For more than 50 years, this nation has kept a fairly strict separation between banking and commerce. But now, amid some high-profile requests by businesses to gain banking powers, economists are revisiting the question of whether the wall has outlived its usefulness.

Interview

We talk with Russell Sobel of West Virginia University about why the Mountain State's economy lags behind its neighbors, and whether Wal-Mart and other big-box stores are really so bad for rural America and small business.

Economic History

The High Point Market is the world's biggest furniture trade show. Over the years many other cities have tried to steal the spotlight from High Point. Las Vegas is the latest, and perhaps most formidable, contender.

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Was the central bank to blame for the Great Depression?

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