

fedgazette

Regional Business & Economics Newspaper

minneapolisfed.org

More on Roads and Bridges ...

WHAT ABOUT THAT STIMULUS MONEY? page 4
Is it more than pothole filling?

THINK OF IT AS A USER FEE, NOT A TAX page 7
Alternatives aim to stem declining revenues.

NO SHORTAGE OF CREDIT HERE page 8
Muni bond market active, with help from Uncle Sam.

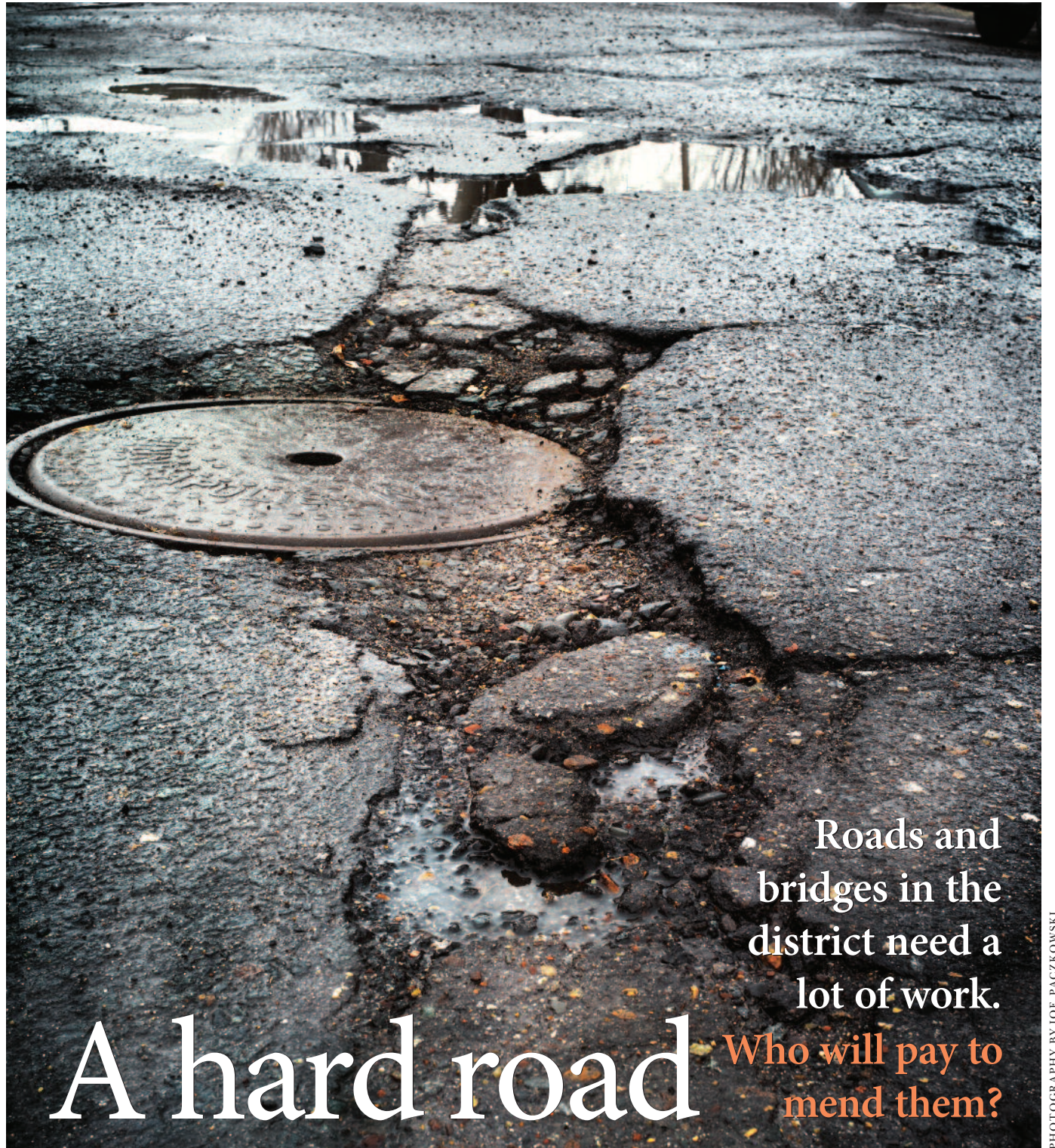
RECEDING WATERS page 10
District farmers tighten the irrigation spigot.



MILC: NECTAR FOR STRUGGLING DAIRY FARMS page 12
Milk market goes sour.

HIGHER EDUCATION MELTING POT page 14
District universities and colleges draw international students.

See the enhanced *fedgazette* online at minneapolisfed.org



PHOTOGRAPHY BY JOE PACZKOWSKI

By PHIL DAVIES
Senior Writer

Motorists in Stutsman County, N.D., will eat more dust on the drive into town if county officials go forward with their plan to cut road maintenance costs—returning stretches of paved road to gravel.

Roads in the farm county astride Interstate 94 are in bad shape and getting worse due to lack of funding. The county budgets about \$750,000 annually to maintain about 530 miles of roads. But reconstructing paved roads—needed in many instances to restore roads that take a daily pounding from heavy trucks and farm equipment—

costs over \$500,000 per mile. “You can see that’s a problem,” said Highway Superintendent Mike Zimmerman. “We do not have the money to rebuild the roads.” Instead the county patches cracks and potholes and performs other basic repair work.

In recent years, county property tax collections and federal and state aid have failed to keep pace with rising construction costs. In 2008, the County Commission tried to raise property taxes to pay for a \$21 million road restoration project, but county voters defeated the measure.

Faced with few options, the commission

Continued on page 2

The funding mechanism for roads and bridges is “dysfunctional. ... There seems to be a disconnect between government services that are provided and the need to actually provide some funding for them.”

—Robert Noland, Rutgers University

Roads and bridges from page 1

was pushing ahead last winter with plans to convert at least 100 miles of paved road to gravel over the next five to 10 years. County residents have protested, but continued deterioration of the roads “has forced us into a position where it could become a safety issue,” Zimmerman said. Gravel roads don’t develop cracks and potholes, and they are less expensive to maintain than asphalt.

Throughout the Ninth District, state and local governments are struggling to maintain and improve their highway infrastructure. Despite an overall improvement in bridge conditions since 2000, most district states have huge backlogs of road and bridge work. The overall condition of roads in the district has deteriorated during the past decade, with marked declines in Minnesota and North Dakota, according to federal statistics and surveys.

The passage of time, sagging funding and escalating construction costs have taken a toll on the district’s roads and bridges. But state departments of transportation and local public works departments are less able to cope than in the past; in recent years, the flow of fuel tax and other revenues has slowed due to more fuel-efficient vehicles and the recession, while construction costs have trended sharply upward. In particular, many local governments find themselves stuck between a rock and a hard place, unable to raise property taxes to compensate for rising costs and stagnant state and federal aid.

Government wields its taxing authority to provide freeways, highways and bridges that serve the public good. By

facilitating the movement of goods and people, transportation infrastructure promotes economic growth. Failure to maintain or improve highways exacts societal costs, including lower business productivity and less personal mobility.

Yet government at every level, from the county courthouse to the Capitol in Washington, D.C., has found raising more money for highway infrastructure a hard road. The funding mechanism for roads and bridges is “dysfunctional,” said Robert Noland, director of the Voorhees Transportation Center at Rutgers University. “There seems to be a disconnect between government services that are provided and the need to actually provide some funding for them.”

People have become accustomed to paying less and less in real dollars for the use of roads and bridges. The federal gasoline tax has stayed constant since 1993, and with the exception of Minnesota, district states haven’t increased fuel taxes for years. As a result, road use is underpriced, contributing to traffic congestion in cities and deteriorating roadways in rural areas.

Something has to give. If raising gas taxes and vehicle registration fees won’t fly with voters, society must find other ways to sustain and grow the highway network—or else lower its expectations for system performance. In that case, personal mobility must be redefined in ways that either require less investment or offer better likelihood of public (and therefore political) support.

Kicking the can down the road

There was a time in the district, and in the nation, when motorists zipped down roadways of freshly laid asphalt and over newly erected bridges. In the decades after World War II, federal and state government invested heavily in highway infrastructure. The Federal-Aid Highway Act of 1956 appropriated \$25 billion for the construction of 41,000 miles of interstate highways over a 20-year period—the largest public works project ever undertaken up to that time. Billions more were spent on upgrading state highways, county roads and city streets laid out decades earlier.

As the economies of district states grew, their spreading road networks became conduits for further job creation, income growth and business expansion. Farmers relied on county roads to deliver their crops to the nearest elevator; manufacturers and wholesalers trucked their goods to distant cities via interstate and trunk highways; suburbanites commuted on urban freeways and connectors to their jobs in the city.

But now that infrastructure is showing its age and buckling in places from heavy use and neglect. In Minnesota, most interstate highways and about one-third of state highway bridges are over 40 years old. In the Dakotas, many county roads weren’t built to carry modern farm implements and semi-trailer trucks that weigh 10 times as much as an SUV. “Our equipment’s bigger, our trucks are bigger and the demand on our roads is just growing every year,” said Bob Wilcox, executive director of the South Dakota Association of County Commissioners.

Nationally and in the district, much construction and maintenance work isn’t being done due to lack of funding. A big chunk of the to-do list consists of a backlog created by years of putting off bridge repairs, highway expansions, repaving and other projects.

A commission formed by Congress in 2007 to assess the condition of the transportation system estimated that an additional annual investment of \$89 billion was necessary over the next 25 years to improve the country’s roads and bridges. Assessments of surface transportation needs in district states also run into the billions. Last year, the Minnesota Department of Transportation (MnDOT) pegged needed investment in state-owned highways and

bridges through 2028 at \$62 billion—far in excess of anticipated revenues of \$15 billion over that period. In Wisconsin, the Legislative Fiscal Bureau has recommended an additional \$400 million per year for state highway construction and maintenance.

Estimates of “unmet needs” like these should be viewed cautiously, because they include increased capacity—new highways, additional freeway lanes, bigger bridges. It’s fair to ask whether the benefits of building extra capacity outweigh the costs, especially in urban areas where more mobility options exist for people to get where they need to go, whether via bicycle, bus, train or on foot. For example, 63 percent of the spending called for in MnDOT’s 20-year investment plan is for state highway expansion in the Twin Cities to relieve traffic congestion. Only about \$16 billion, or roughly one-quarter of the recommended investment, is for preserving existing road and bridge infrastructure—arguably work that yields a greater return on investment.

Nevertheless, \$16 billion still amounts to more than the total highway revenue MnDOT anticipates over the 20-year period. Presumably, some maintenance and rebuilding work in Minnesota will be left by the wayside.

Likewise, North Dakota has its work cut out keeping its citizens moving, given projected funding levels. A 2008 study by researchers at North Dakota State University (NDSU) found that an additional \$254 million a year was needed just to maintain existing roads and bridges in the state, with no increases in capacity. More than half of that figure was for county, township and city roads.

Look out for potholes

The district’s primary surface transportation network is hardly on the verge of collapse. For the most part, roads and bridges in the district are in reasonable shape, according to data compiled by the Federal Highway Administration (FHWA). These data cover interstates, state highways and main county roads.

FHWA uses a “roughness index” to gauge the ride quality of pavement. In the district as a whole, excluding the Upper Peninsula of Michigan, only 14 percent of pavements were rated in poor or mediocre (less than fair) condition in 2007. The rest were in fair, good or very good condition.

Moreover, the serviceability of the district’s bridges improved during the

fedgazette

FEDERAL RESERVE BANK OF MINNEAPOLIS
Regional Business & Economics Newspaper

ISSN 1045-3334

Subscriptions are available without charge. Back issues are available on the Web. Articles may be reprinted if the source is credited and Public Affairs is provided with copies. Permission to photocopy is unrestricted. Send correspondence to Public Affairs, Federal Reserve Bank of Minneapolis, 90 Hennepin Avenue, P.O. Box 291, Minneapolis, MN, 55480-0291; (612) 204-5255.

E-mail: letters@mpls.frb.org
Internet: minneapolisfed.org

One of the Minneapolis Fed’s congressionally mandated responsibilities is to gather information on the Ninth District economy. The *fedgazette* is published quarterly to share that information with the district, which includes Montana, North and South Dakota, Minnesota, northwestern Wisconsin and the Upper Peninsula of Michigan.

The opinions expressed in the *fedgazette* are expressly those of the authors or of attributed sources and are not intended to represent a formal position of this bank or the Federal Reserve System.

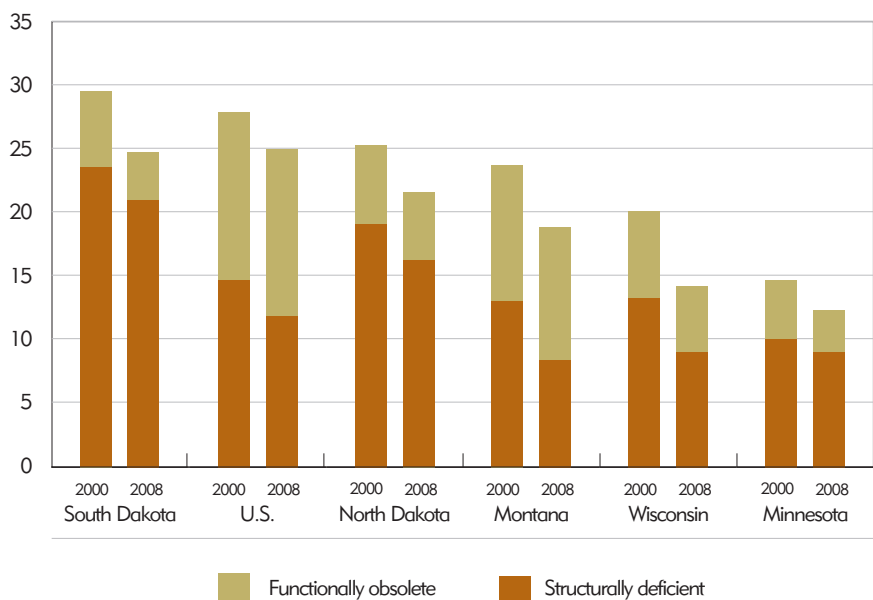
EXECUTIVE EDITOR	Arthur J. Rolnick
SENIOR EDITOR	David Fetting
EDITOR	Ronald A. Wirtz
MANAGING EDITOR	Jenni C. Schoppers
SENIOR ECONOMIST	Terry J. Fitzgerald
REGIONAL ECONOMIST	Tobias Madden
ASSOCIATE ECONOMIST	Rob Grunewald
SENIOR WRITERS	Douglas Clement Phil Davies
STAFF WRITER	Joe Mahon
ART DIRECTOR	Phil Swenson
GRAPHIC DESIGNERS	Rick Cucci Mark Shafer



PHOTOGRAPHY BY JOE PACZKOWSKI

Chart 1 Bridge conditions have improved

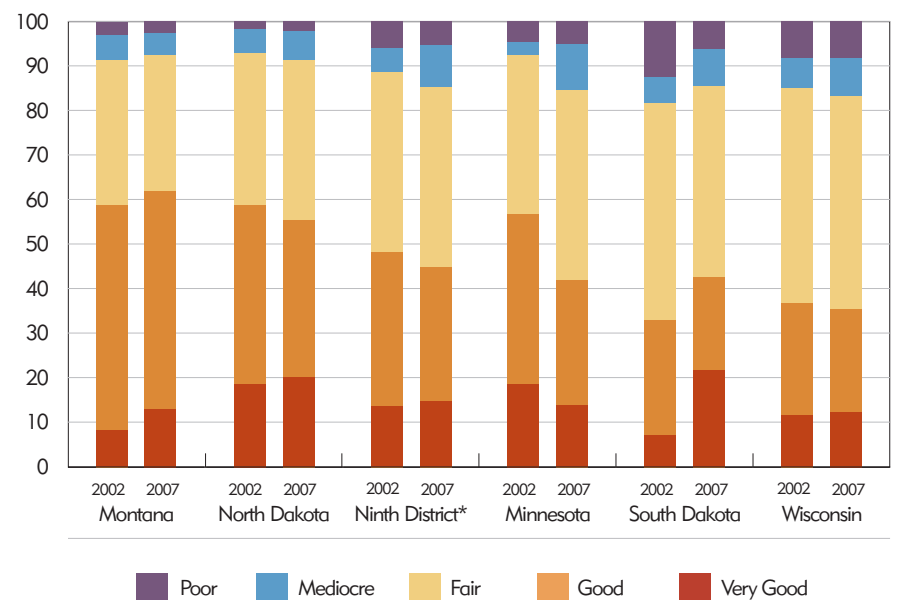
Percent of bridges



Source: Federal Highway Administration, National Bridge Inventory: Deficient Bridges by State and Highway System

Chart 2 Road conditions vary, but overall trend downward

Changes in road conditions, percent of miles



*Includes all of Wisconsin and excludes the U.P. of Michigan
Source: Federal Highway Administration, Highway Statistics 2002 and 2007

Roads and bridges from page 3

past decade. According to FHWA's National Bridge Inventory, every district state saw a drop in the number of structurally deficient and functionally obsolete bridges between 2000 and 2008 (see Chart 1, page 3). These bridges need repair, have reduced load-carrying capacity or are too narrow for modern trucks. The figures don't include further improvements made last year in response to the collapse of the I-35W bridge in Minneapolis in 2007.

However, decay continues to gnaw at the district's highway infrastructure. A multitude of bridges in district states remain substandard. In 2008, South Dakota had more than 1,400 structurally deficient and functionally obsolete bridges—a quarter of the state's water crossings. In North Dakota, 22 percent of bridges were rated deficient or obsolete that year (the national average was 25 percent).

And the overall condition of district roads declined from 2002 to 2007, with Minnesota suffering the worst falloff in ride quality during that period (see Chart 2, page 3). The percentage of the state's roads in poor or mediocre condition more than doubled, while the proportion of miles in good or very good condition dropped from 57 percent to 42 percent. Road quality also went south in Wisconsin and in North Dakota.

Comprehensive data on the condition of local roads and bridges in the district is scant (the FHWA data don't include minor county and township roads), but there's evidence that they're in worse shape than state-owned highways and heading downhill. Despite relatively light use—while local routes account for the vast majority of miles in district states, they handle a fraction of the traffic—transport infrastructure in many rural areas is falling apart from age and pummeling by heavy equipment.

A 2008 survey of Minnesota county highway engineers gave a downbeat assessment of road and bridge quality; nearly three-quarters of the engineers said the facilities they oversee had deteriorated over the past 10 years.

In North Dakota, about one-third of county and township roads were in poor condition in 2008, according to the NDSU study of road investment needs in the state. Conditions appear to have deteriorated since the last survey in 2000, coinciding with the overall decline in the ride quality of the state's roads.

Skin deep and a mile wide

In some district states, road conditions have actually taken a turn for the better in recent years. In Montana—the regional leader in pavement smoothness, according to FHWA statistics—the

percentage of roads in good or very good condition rose from 2002 to 2007, while the share of roads in subpar condition fell. The overall condition of roads in South Dakota improved as well.

But fewer cracks, ruts and potholes doesn't necessarily equate to a healthy, growing road system. Because of tight funding and spiraling construction costs, in some cases construction activity—building or rebuilding roads—has taken a back seat to less costly efforts aimed at preserving existing pavement.

"We're trying to stretch the money out as far as we can by doing a lot of resurfacing—overlays, chip seals—to hold everything together," said Dave Leftwich, interim director of transportation programs for the North Dakota Department of Transportation. "What we aren't doing as much of—because it's very costly—is regrading the roads, widening them, putting wider shoulders on, that sort of thing."

By emphasizing maintenance, the North Dakota DOT has improved ride quality on the state trunk highway system in recent years even as the overall condition of the state's roads fell, according to state DOT figures. The South Dakota DOT has also stressed pavement preservation. (In contrast, MnDOT has devoted a larger share of resources to new construction over the past decade—one reason for a decline in the condition of state highways as well as overall road quality in Minnesota.)

Prolonging the life of existing pavement is also job one at many local road departments in the district. In North Dakota, county road departments are "very much in a preservation mode," said Terry Traynor, assistant director of the North Dakota Association of Counties. "They're trying to preserve the quality of the roads that they have."

But this skin-deep strategy may make for a bumpier ride down the road. Resurfacing and patching cannot keep roads in good shape indefinitely; eventually they must be rebuilt from the ground up to restore their structural strength, enhance safety and—in areas where the population and economy are growing—accommodate more traffic.

The South Dakota DOT has warned the state Legislature that gains in pavement quality will be lost if more resources aren't allocated to reconstruction. Extrapolating from current funding and cost trends, the department forecasts a sixfold increase in the mileage of highways in poor condition over the next decade.

In Wisconsin, a similar decline in the condition of county roads seems likely without additional funds for new construction and rebuilding. "You can only maintain things for so long," said Daniel Fedderly, executive director

What about that stimulus money?

Federal economic recovery legislation last year pumped hundreds of millions of dollars into roads and bridges in the Ninth District. Meant to spur employment in highway construction and related industries, the stimulus spending was welcomed by financially strapped state DOTs, local public works departments and construction firms. Minnesota received \$474 million for highway construction and repair under the American Recovery and Reinvestment Act; North Dakota received \$170 million, \$13 million of which was passed along to county governments. State highways and local roads in northwestern Wisconsin received \$28 million as part of the state's stimulus allocation.

The stimulus funding helped address pressing needs such as the repair or replacement of 43 deficient bridges in Minnesota and \$150 million worth of construction and maintenance projects in North Dakota that would otherwise have been delayed. But it was a stopgap, not a permanent fix for the district's infrastructure troubles; most of the recovery money has already been spent on "shovel-ready" projects that were included in 2009 or 2010 budgets. Next year, it's back to business as usual for state DOTs and local road departments—relying on motor fuel taxes, vehicle registration fees and other standard revenue sources to pay for overdue and ongoing road and bridge work.

Testifying before the South Dakota Legislature last summer, state Transportation Secretary Darin Bergquist observed that some have viewed the stimulus funding as "manna from heaven" that would solve the state's highway funding problems. "It didn't do that," he said. "What it did do was provide us a two-year, short-term boost or Band-Aid to help carry us forward and help a little bit with some of the highway construction needs in the state."

In March, Congress dispensed another Band-Aid—an \$18 billion jobs bill that includes a modest expansion of an initiative that helps state and local governments finance infrastructure projects. But how much money for roads and bridges the district would net from subsequent stimulus measures was unclear; other bills designed to boost employment were in play on Capitol Hill.

—Phil Davies

of the Wisconsin County Highway Association, a government group that supports county road operations. "After a few years, you get a declining return on your investment. ... [T]he counties are at the point where continued long-term maintenance is not the most viable option."

Running low on gas

Public agencies responsible for building and maintaining roads and bridges are caught in a tightening financial vise: Federal and state funding is shrinking as costs are climbing.

Motor fuel consumption has leveled off in the past five years because average fuel efficiency has increased, and economic forces—high pump prices followed by the recession—have reduced commuting, shopping and other trips. In 2008, miles driven on U.S. roads fell for the first time since the 1970s and as of last fall had not rebounded to previous levels. Lower fuel consumption means less revenue generated by federal and state excise taxes on gasoline and diesel fuel.

A drop in federal fuel tax receipts required Congress to inject general

fund revenue into the Federal Highway Trust Fund to keep transportation programs running. Recent legislation pumped \$19.5 billion into the depleted fund, ensuring federal funding for highway construction through year's end. But the fund is expected to again run dry without further intervention.

State dollars make up a significant proportion of funding flowing to state DOTs, ranging from roughly one-third in North Dakota to 60 percent in Wisconsin. (Federal dollars, requiring state matches for new construction and other uses, account for most of the balance in these and all district states.)

Transportation departments have felt the impact of slumping revenues from state fuel taxes, the largest single source of state revenues for transportation. Adjusted for inflation, collections from gasoline and diesel taxes have either stayed flat or declined since 2003 in every district state (see Chart 3). In addition, receipts from state vehicle registration fees, taxes on auto sales and other auto-related revenues have been under siege since the recession began at the end of 2007. Wisconsin hiked its auto registration fee by more than a

third in 2008, but last year a drop in vehicle registrations contributed to a \$49 million shortfall in the state's transportation fund.

"I think you're seeing the same issues in every state," said South Dakota Rep. Shantel Krebs, who has proposed legislation to increase state taxes and fees that support roads. "People are driving less, they're driving more efficient vehicles, and therefore the revenue coming into their states is declining because that's how their roads are funded."

The drop-off in state road taxes and fees trickles down to local public works departments, which in most district states receive state aid to build and maintain roads and bridges. In Minnesota, state highway user tax revenue distributed to counties and cities declined in constant dollars from 2003 to 2009.

As funding for roads and bridges has faltered in district states over the past five years, construction costs have ballooned because of increased worldwide demand for asphalt, concrete, steel and other commodities used to build and maintain highways. Materials prices have increased at a much faster pace than general consumer prices; the North Dakota DOT estimates that the highway construction costs in the state rose about 75 percent between 2004 and 2009. Much of that jump was due to higher oil prices, which increased transportation expenses, Leftwich said. "North Dakota is a long ways from anyplace. Everything we use gets trucked in here, and [prices] keep going up."

Other district states have seen less dramatic price hikes, and there are signs that the recession cooled construction inflation; MnDOT's construction cost index fell slightly in fiscal 2009 compared with the previous year (see Chart 4). But nobody's sure how much costs will moderate in the future, especially in North Dakota, where oilfield development in the Williston Basin has sustained high demand for construction materials and labor.

Taxes: Stuck in the slow lane

To make ends meet, road agencies have had to borrow money or cut back operations. In 2008, in response to the I-35W bridge disaster, the Minnesota Legislature authorized \$1.8 billion in bonding over the next decade to finance bridge repair, new highway interchanges and road resurfacing. The South Dakota DOT slashed its 2008-2009 operating budget by 25 percent, forgoing equipment purchases, putting off building repairs and suspending a \$15 million program that allows local governments to build

roads faster and more cheaply by swapping federal funds for state funds.

The obvious solution to the funding crunch is to raise more revenue to cover rising materials costs and work down the list of slated road and bridge projects. Traditionally, government has compelled the users of highway infrastructure—motorists—to foot the bill for construction and repairs by imposing motor fuel taxes, vehicle registration fees and other auto-related charges. In addition, many local governments levy taxes on property and general sales to support roads and bridges, on the grounds that freedom of movement benefits all residents. In Montana, about 42 percent of road and bridge spending by local government in 2007 came from property taxes and special assessments.

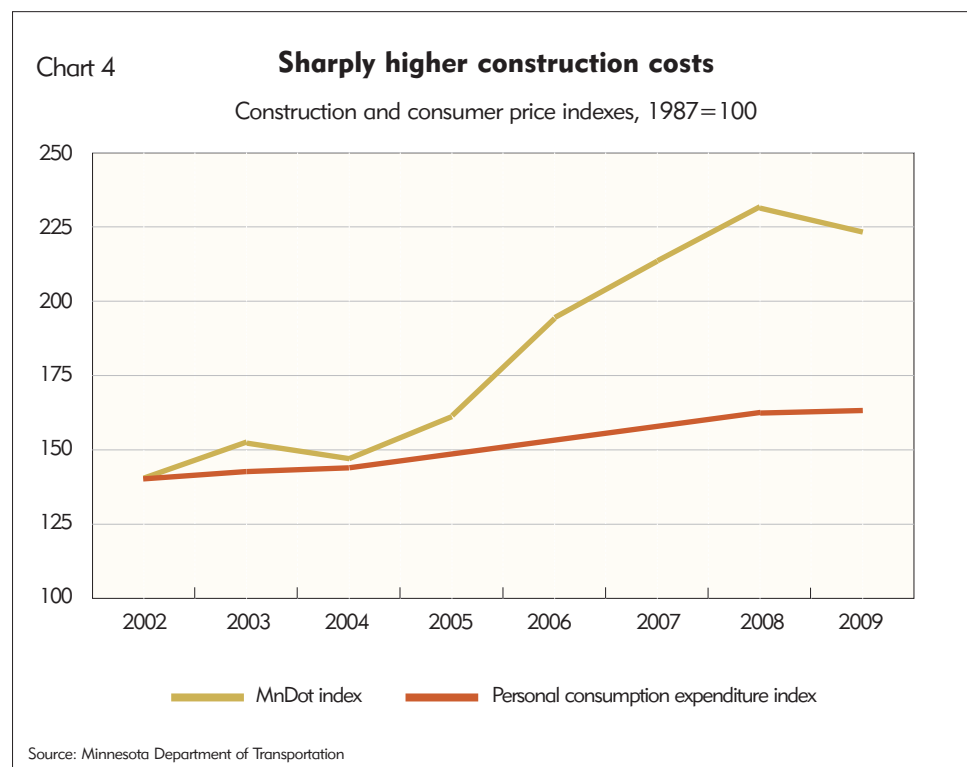
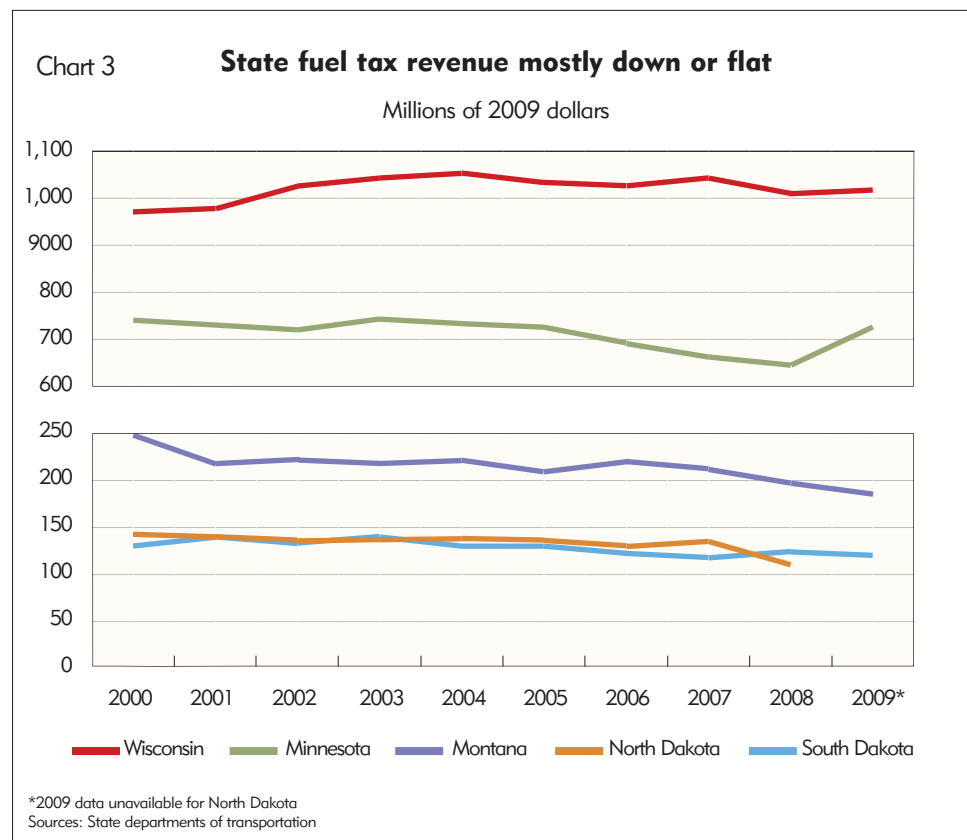
But over the past 15 years, government—at all levels, in the district and nationwide—has struggled to increase taxes and fees to pay for highway construction and maintenance. While highway spending has risen—between 1995 and 2007 annual inflation-adjusted disbursements for all U.S. roads increased 37 percent, according to FHWA statistics—motor vehicle tax rates and fees have failed to keep up with construction inflation and demands caused by heavy, sustained use of the system.

Congress last increased the 18.4 cents-per-gallon federal gasoline tax in 1993; as a result, its buying power has fallen by half since then. Prospects for raising the tax anytime soon appear dim, with key lawmakers and President Barack Obama opposed to raising the fuel tax during a period of high unemployment.

While some district states have raised fuel taxes in recent years—Minnesota last raised its levy in 2008, as part of legislation that included the bond issue for roads and bridges—other district states haven't increased them for years (see table, page 6). South Dakota's taxes on gasoline and diesel fuel were last increased in 1999. Montana's fuel taxes haven't risen since the Ford administration.

Proposed legislation in South Dakota intended to address an estimated \$240 million annual shortfall in revenue for roads and bridges would boost the state gasoline tax by a dime a gallon within two years, generating an extra \$75 million per year for state highway construction and repair. The bill would also increase annual vehicle registration fees—giving local road departments over \$30 million per year in additional funding by 2012—and raise the state auto sales tax. But legislators focused on economic recovery were expected to give the measure short shrift.

"Even though people see the need, because they can see the potholes, the disrepair in our roads, this is a tough



year to do anything when it comes to fee increases," said Krebs, the bill's sponsor and chair of the Legislature's Joint Transportation Committee.

In a number of district states, including Wisconsin, Minnesota and North Dakota, lawmakers have imposed restrictions on local tax levies for public services. City, county or township residents must approve property tax increases beyond a specified mill limit, or new property or sales taxes dedicated to roads and bridges. That's no problem for local governments in areas with robust economies; increases in valuation generate sufficient revenue to cover needed road work, even as construction costs escalate.

But it's a different story in areas with stagnant or declining property values; when county commissions or town boards go to voters to try to increase taxes for roads, they are usually rebuffed. Traynor, of the North Dakota Association of Counties, couldn't recall a single instance in the past 10 years of a county enacting a property tax increase for roads or bridges.

The Stutsman County Commission's failed bid to raise property taxes in 2008 marked the fourth time since 1972 that county voters have rejected higher taxation for road maintenance. They also defeated a proposal to introduce a one cent general sales tax to pay for road work.

Fuel tax rates, U.S. and district states

Cents per gallon

	Gasoline	Diesel fuel	Last increased
U.S.	18.4	24.4	1993
MN	27 (27.5 July 1)	27 (27.5 July 1)	2008
WI	30.9	30.9	2006*
MI	19	15	1997
ND	23	23	2005
SD	22	22	1999
MT	27	27.75	1974

*Last CPI indexing adjustment. Wisconsin no longer indexes its fuel tax to inflation.



When access to the highway system is underpriced, rural roads deteriorate from lack of maintenance, and traffic clogs urban freeways and thoroughfares.

Roads and bridges from page 5

Explanations abound for public resistance to increased spending on highway infrastructure. Taxing auto travel hits the politically potent middle class. Compared to new ribbons of concrete and steel, maintenance of existing roads and bridges is boring. Siphoning off fuel tax revenue to fill holes in the general budget—as Congress did in the early 1990s—breeds resentment of auto-related taxes and fees. “A big part of it is that people see it as a tax, not a user-based fee,” Krebs said.

Whatever the reasons for the push-back against higher taxes or user fees, the consequence is that in many parts of the district and nation, those who benefit from roads and bridges aren’t bearing their full cost. Road taxes and fees don’t cover what it costs to build and maintain highway infrastructure, much less cover the total cost of driving, which includes social costs such as air pollution and lost productivity due to traffic congestion.

When access to the highway system is underpriced, rural roads deteriorate from lack of maintenance, and traffic clogs urban freeways and thoroughfares. In the Twin Cities, freeway congestion

has abated since 2004, although it spiked after the I-35 bridge collapse. MnDOT credits a drop in traffic to high gas prices and the recession, and the completion of several big construction projects. However, the agency projects congestion growing over the long term as demand for lane space again outstrips supply.

At some point in the future—not tomorrow or next year, but probably within the next decade—the district’s highway system will come to a fork in the road. For the network to stay in working order and expand to accommodate a rising population and resurgent economy, funding must increase. That means motorists and others beneficiaries of roads and bridges will have to pay more for their use. Alternatively—the other path forward—the cost of operating the system has to fall to match lower levels of investment.

Faced with continued public resistance to increases in fuel taxes and other familiar levies and fees for roads, government may be able to tap other forms of revenue, such as road tolls and assessments on developed land (see “Think of it as a user fee, not a tax,” page 7). “There are a lot of solutions to [the

funding] problem,” said David Levinson, a professor at the University of Minnesota who specializes in transportation technology and policy. “The question is, do politicians see the decline in transportation revenue as a serious problem? To the extent that they do, then they’ll address it.”

If significantly increasing funding proves a nonstarter, policymakers could instead try to hold the line on costs by limiting use of roads. Slowing or even reversing traffic growth would reduce the need for new construction and maintenance.

One way to curb road use is to put a price on congestion—a sure sign of overuse. Faced with a charge for using busy roads at peak travel times, some drivers will opt to take a different route, carpool or ride mass transit. A number of big cities worldwide have instituted congestion pricing on crowded highways. In the Twin Cities, rush-hour commuters driving alone on I-394 and I-35W pay a toll to access reserved lanes, and this fall MnDOT plans to open toll lanes on busy Highway 62 as part of a reconstruction project.

Investing more in public transport—buses, dial-a-ride services and trains such as the new Northstar Commuter

Rail line between Minneapolis and Big Lake, Minn.—and encouraging telecommuting could also curb road use in cities and towns.

Congestion tolls and public transit aren’t going to save rural roads from ruin; on vast stretches of open road in the district, the main problem is insufficient maintenance, not overuse. State DOTs and local road departments can strive for greater efficiency—collaborating on maintenance, for example, or employing innovative, less expensive construction techniques. But the ultimate consequence of chronic funding shortfalls is reduced road quality and safety.

Most people in rural areas would rather avoid the course that Stutsman County has mapped out. Converting pavement to gravel—or fixing fewer potholes and rickety bridges—risks diminishing the economic prospects of communities served by the road network. Deficient roads raise costs for businesses and deepen the isolation of residents.

But downgrading or abandoning lightly traveled routes may be the only option for local governments in the district with limited means to maintain them. “If the people are not willing to pay for the cost of maintaining the road, then the road is not worth it,” Levinson said.

Noland of Rutgers acknowledges that “defunding” roads could cause pain and loss in rural areas. Some advocate boosting aid for local roads. But such a policy would merely shift costs from local to state or federal taxpayers—and is unlikely to address society’s arguably unrealistic expectations of the transportation system and apparent unwillingness to pay for it.

“The bottom line is that any kind of transportation decision is political,” he said. “We tend to hide these political judgments as to what we should fund and what we shouldn’t. What I would argue is that you want to make these judgments—and what the potential consequences are—explicit. That’s what the public needs to know.” **f**

Think of it as a user fee, not a tax

Various alternatives have been proposed to the familiar, primary mechanisms—fuel taxes, auto registration fees and property taxes—for funding transportation infrastructure. Each approach aimed at stemming the decline in revenue for roads and bridges has its selling points, but also downsides that make implementation problematic. Here's a run-down of ideas for getting motorists and other beneficiaries of the highway system to pony up a little more for its support.

• OPEN-ROAD TOLLING

This pay-as-you-drive strategy for dense, urbanized corridors is more common on the East and West coasts, although there are examples in the district, such as the toll lanes on I-394 and I-35W in the Twin Cities. Instead of depositing coins at a toll booth, motorists pay electronically via radio-frequency identification or license-plate imaging systems. Tolls can be collected with the intent of reducing congestion, as on I-394, or raising funds directly from highway users for construction and ongoing maintenance. Government agencies usually operate toll roads and bridges, but they can also be owned and run by investor-owned companies. (About 10 states have opened private toll roads over the past 15 years.)

In the district, the Transportation Development Association of Wisconsin, an advocate for highway and transit investment, has proposed open-road tolling on I-94, I-90 and I-43—if a federal ban on converting freeways to toll ways can be overturned.

Legalities aside, there are other reasons why open-road tolling may not catch on in the district. Many motorists view tolls as onerous—voters in eastern states have rebelled against even slight increases in charges on existing toll roads. And there's a risk that tolling authorities will charge too much, inducing too many drivers to take other routes in order to avoid the toll. "It's a waste of resources to [overcharge], and it pushes people onto other roads that are less safe and more congested," said David Levinson, a professor at the University of Minnesota's Center for Transportation Studies.



• VEHICLE MILEAGE TAXES

If motor fuel consumption is expected to fall due to higher fuel efficiency standards (federal rules call for the national auto fleet to average 35 miles per gallon by 2020) and more electrically powered vehicles, why not tax miles instead of gallons? A vehicle miles traveled (VMT) tax potentially could generate more funds for roads by broadening the tax base; after the recession, nationwide VMT is expected to resume its upward trajectory even as fuel use wanes.

Adopting some sort of VMT tax in the future probably is inevitable, because of growing numbers of hybrid electric and plug-in electric vehicles. A congressional transportation finance commission concluded in 2009 that "the most viable approach to efficiently fund federal investment in surface transportation in the medium to long run will be a user charge system based more directly on miles driven." The state of Oregon recently completed a pilot VMT program that used Global Positioning System technology to track mileage.

But many experts believe that it's too early to introduce a VMT tax. Gasoline or diesel fuel still powers virtually all vehicles on U.S. roads. Moreover, fuel taxes are inexpensive to collect and help to reduce pollution and greenhouse warming by penalizing consumption. A mileage tax, on the other hand, is likely to be expensive to administer and would remove a direct incentive to curtail fuel use.

A VMT tax also raises privacy concerns, because of those onboard GPS devices, notes Robert Noland, a transportation expert at Rutgers University. "If the public doesn't want a gas tax, how come they're going to go for a fancy scheme where you're taxing VMT through electronic and, what would appear to be, far more intrusive measures?"

• LAND VALUE TAXES

Investments in highway infrastructure such as a rebuilt freeway interchange or new bridge often increase the value of adjacent private land by improving access to job centers, schools and other destinations. Land value taxes capture some of this

increased valuation that otherwise would entirely benefit landowners.

Typically, a land value tax assesses land and buildings separately at different rates; vacant land is taxed at a higher rate than structures to encourage development. Use of land value taxes has been limited in the United States, partly because of state control of local taxing authority. But a municipality or county conceivably could levy a land tax to finance road or bridge projects, extracting a contribution from landowners before, during or after construction.

However, accurately assessing the added value created by a particular highway project may prove difficult, and a land tax isn't likely to sit well with property owners. "The argument for this is theoretically sound," Levinson said. "Politically, it's a little more challenging."

Other strategies that capture the value of highway-aided real estate development: **tax increment financing** (creating a TIF zone around a freeway interchange, for example); **special assessments** on property owners; and **joint development**, in which a private entity contributes financially to public roads serving new real estate development.

With the exception of a VMT tax, these innovative financing tools are best suited for urban areas with a lot of traffic and real estate development. Open-road tolling and value-capture techniques are a non-starter for the district's vast network of rural roads. However, other funding mechanisms—all forms of taxation—could support rural highways and bridges. One proposed solution, at least for the short term, is to **index motor fuel taxes to inflation**, so that revenues retain their buying power over time. The Wisconsin Legislature adopted gas tax indexing in the early 1980s, but dropped the practice in 2006.

Other ideas for boosting highway funding include a **motor fuel sales tax** (taxing the value of fuel instead of the quantity), **taxes on vehicle carbon emissions** and a portion of **general sales taxes** applied to transportation.

—Phil Davies

No shortage of credit here

Municipal bond market active, with help from Uncle Sam

By RONALD A. WIRTZ
Editor

Imagine you're a business owner hoping to borrow money despite the fact that your firm—though well established and generally stable—is currently having problems trying to make ends meet, and that's not likely to change much in the short term.

You brace for the lender's response and hear: "No problem—and how about we lend you money at cheap rates, too?"

In today's skittish financial markets, this might seem like fantasy. But not so with municipal bonds, which are getting a generally warm reception from investors when state and local governments seek to borrow money for a new bridge, low-income housing or a variety of other public uses.

The reasons for this amenable credit environment generally have to do with the secure nature of municipal bonds, the lack of good, comparable alternatives and, more recently, a federal bond program that encourages municipal issuers to sell bonds and offers incentives for investors to buy them. Data on current bond issuance also omit a significant amount of additional local and state financing being propped up by other federal initiatives. While these federal supports might be viewed as a boon for municipal issuers that need to raise money, they also distort bond markets and impose significant costs on taxpayers.

Large bills, please

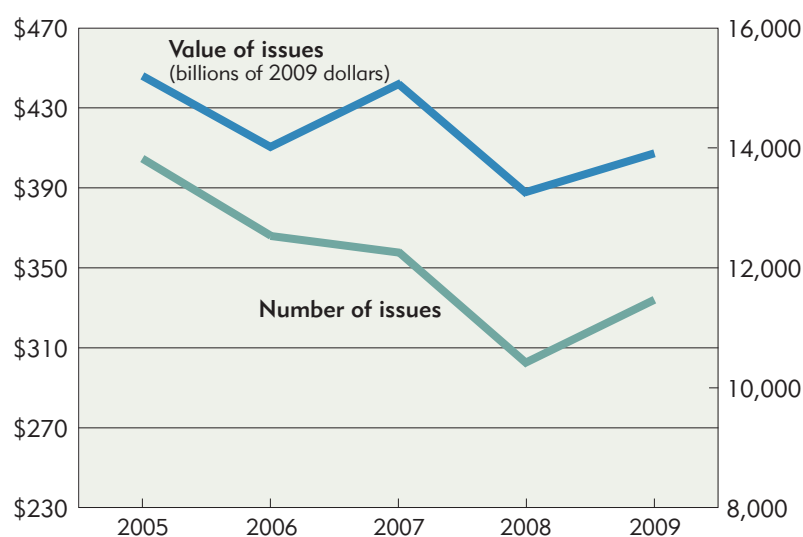
When local and state governments (including their related authorities) need to borrow money for capital projects and a host of other priorities, they sell municipal bonds—the umbrella term for these debt securities.

Last year, the value of municipal bonds issued in the Ninth District rose by just 1 percent; since 2006, annual values (inflation-adjusted) have been table-top flat. Gains were higher last year at the national level, though annual levels over the past few years have been more volatile compared with the Ninth District. (See Charts 1 and 2. All issuance data come from Thomson Reuters, a business data and services firm.)

This might seem like a tepid performance, until you compare it with credit conditions in the broader economy, which are at a virtual standstill: Businesses and consumers are nervous about borrowing and investing, and lenders have raised the bar on who can receive credit.

Total outstanding loans and leases among U.S. commercial banks dropped by about 7 percent—or more than \$500 billion—last year, according to Federal Reserve data. Corporate bond issuance last year bounced back after a steep drop in 2008, but is still 25 percent below inflation-adjusted levels from 2007, according to figures from the Securities Industry and Financial Markets Association (SIFMA). Mortgage-related

CHART 2 U.S. muni bond market seeing uptick
Annual value and number of issues



Source: Thomson Reuters

bond issuance recovered somewhat last year after a great deal of support from the federal bailout of Fannie Mae and Freddie Mac and an aggressive program by the Federal Reserve to purchase mortgage-backed securities. And finally, asset-backed bond sales in 2009 are off almost 80 percent from 2006.

Although it's not quite as obvious in the overall data, the municipal bond market also saw considerable volatility that began in 2007 and came to a head near the end of 2008. (Read more about this volatility in the November 2008 *fedgazette* online at minneapolisfed.org.) But by many measures, the market is currently on stable ground, evident in the fact that the total number of bond issues reversed course last year and ticked upward, both in the district and nationwide (see Charts 1 and 2).

Strong demand for municipal bonds pushed rates downward after a rate spike in late 2008, when financial markets seized up worldwide (see Chart 3). David MacGillivray, a principal at Springsted Inc., a Twin Cities-based municipal bond consultancy, said via e-mail that investors were looking for a safe haven after the financial crisis. After flocking to treasuries, according to MacGillivray, investors "began to realize that higher yields at basically the same risk level could be obtained in munis. This drove up the demand for munis" and forced yields—the returns investors

are willing to accept to part with their money—down.

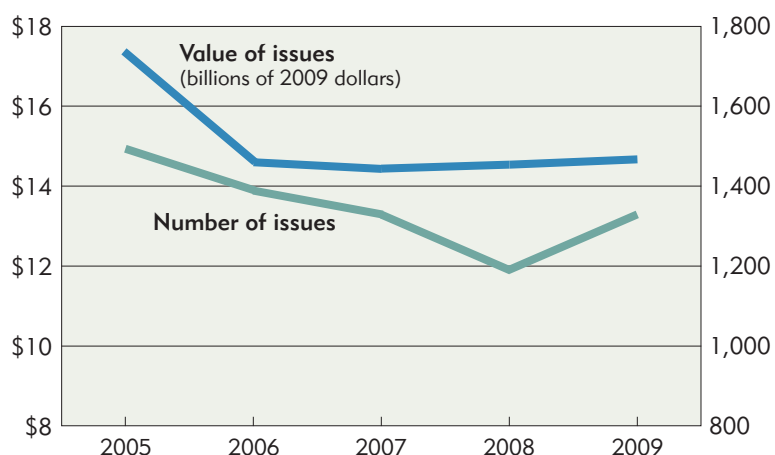
Lower rates have reportedly also generated increased bond refinancing. (Refinancing activity is not reflected in Charts 1 and 2, which tally only primary, or new, issues.) Last fall, for example, the city of Grand Forks, N.D., refinanced three separate bond issues for various water infrastructure projects, saving the city an estimated \$1.7 million. Bond refinancing in Minneapolis will reportedly save upward of \$8 million.

Look closer: More ups and downs

The apparent stability of the municipal bond market nonetheless covers up some volatility in recent years among district states and the various levels of local and state government that issue muni bonds. Wisconsin, for example, has seen the value of bond issuance increase significantly since 2007, growing from \$5.1 billion to \$6.6 billion in 2009, much of it due to a \$1.5 billion bond issue sold to cover a state deficit. Total bond issuance in Montana has gone the other direction, free-falling from almost \$1.4 billion in 2006 to \$153 million last year.

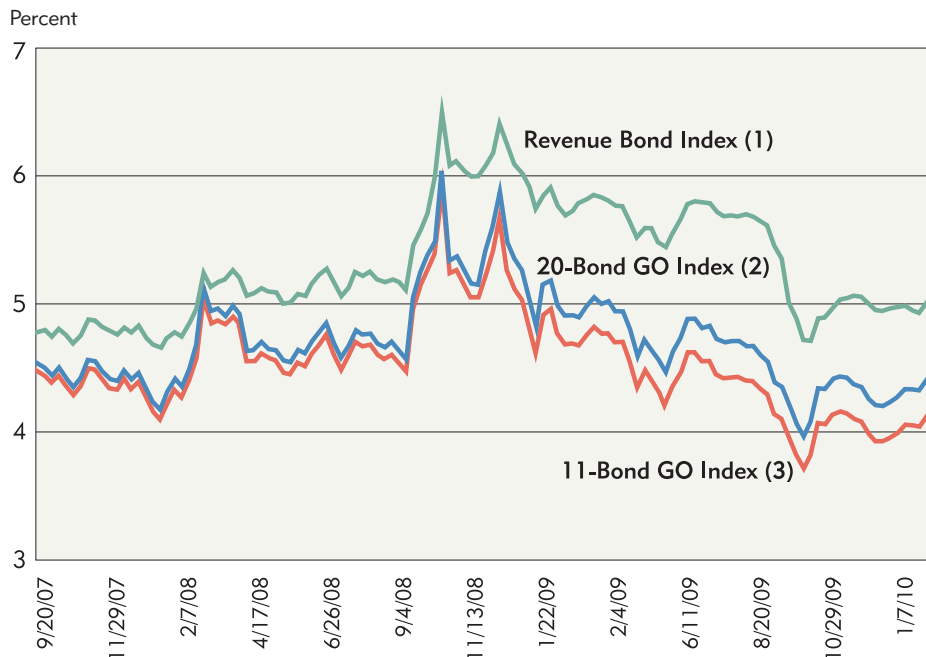
It's more instructive, however, to look at particular bond categories, or so-called use of proceeds. Some uses for bond proceeds are seeing an upward trend. For example, bonds sold for gen-

CHART 1 Ninth District muni bond market holding steady*
Annual value and number of issues



*Includes all of Wisconsin and excludes the U.P. of Michigan
Source: Thomson Reuters

CHART 3 **An issuer's bond market**
Average yields, municipal bond indexes



(1) Revenue bonds maturing in 30 years, with an average rating equivalent to Moody's A1 and S&P's A-plus
 (2) General obligation bonds maturing in 20 years, with an average rating equivalent to Moody's Aa2 and S&P's AA
 (3) General obligation bonds maturing in 11 years, with an average rating equivalent to Moody's Aa1 and S&P's AA-plus
 Source: *Bond Buyer*

eral use and public improvements have skyrocketed (see Chart 4). Proceeds from these bonds can go toward a wide range of uses, and the net increase is almost entirely from Wisconsin and Minnesota. Montana and the Dakotas sell comparatively few bonds for general uses, though sales are rising there as well. (Additional data and charts on municipal bond trends at the state and issuer level are available online at minneapolisfed.org.)

For other programs or uses, bonding issuance is dropping. For example, bond sales to private investors to fund housing programs in district states have witnessed a steady decline (see Chart 4), most likely the result of investor fears over a slumping housing market. And every district state, save Wisconsin, has seen bond proceeds for health care facilities drop significantly in the past year or two.

MacGillivray, from Springsted, said that financial standing has a strong bearing on how individual municipal issuers fare in the bond market. Bonds from highly rated municipal issuers, he said, "continue to have a good market reception with relatively lower interest rates," while lower-rated issues run into more difficulty and are sold at higher interest rates. Such a pattern can also be seen in the wider spread between general obligation and revenue bonds (see Chart 3).

Revenue bonds tend to be lower rated because they depend on project income to repay bond debt. As a result, they are inherently more risky than general obligation bonds that are backed by the full faith and taxing powers of an issuing government. MacGillivray added that noninvestment grade issues, like those used to fund local economic

development projects, typically get no takers until projects have established a revenue history. This can mean some projects never get off the drawing board.

Lending a hand—or a shove

But bond issuance data don't tell the whole story, because the federal government has intervened to provide financing to local and state governments in areas where the private bond market has backed away. Much of this federal assistance is not captured in the Thomson Reuters data, which track only private-buyer bond purchases.

For example, the Montana Higher Education Student Assistance Corp. is authorized by the state to sell bonds to finance student loans. The collapse of the auction-rate bond market in 2008 dried up hundreds of millions of dollars in traditional funding for the organization. (More on this topic can be found in the November 2008 *fedgazette* online.) Enter federal lawmakers, who in 2008 created a program whereby MHESAC can sell student loans from previous academic years to the federal government, with the proceeds funding new student loans. The arrangement is similar to the home-mortgage liquidity provided by Fannie Mae and Freddie Mac.

An even more prevalent example in the district involves local and state housing authorities, which typically issue bonds to pay for various home-finance programs, including those serving first-time and low-income buyers. As Chart 4 demonstrates, private investors have shied away from buying these program bonds because of the shakiness of the overall housing market.

Despite these clear market signals—or because of them, depending on your perspective—the federal government started two programs last fall to fund these housing organizations. The New Issue Bonds Program involves swapping municipal bonds for more desirable securities from Fannie Mae or Freddie Mac. Once the swap has taken place, the U.S. Treasury buys the securities from the municipal issuer. Last year, housing agencies in 49 states took advantage of this three-way swap, including state housing agencies in each district state and two local agencies in Minnesota—the Dakota County Community Development Agency and the Minneapolis-St. Paul Housing Finance Board. In total, seven housing agencies have been authorized to receive up to \$1.2 billion in financing through this program, according to a federal database.

Yet another program provides temporary credit and liquidity to these same housing authorities using similar financial arrangements with the U.S. Treasury and Freddie Mac and Fannie Mae. Only one agency in the district—the Wisconsin Housing and Economic Development Agency—had received an allocation from the program as of January, but to the tune of almost \$500 million, according to federal data, allowing the agency to restart a first-time home buyer program in March that had been mothballed for 17 months.

None of this replacement financing shows up in annual municipal bond statistics; if it were added, the total value of local and state borrowing would have been considerably higher.

Bond tower of BABble

The entire municipal bond market also got an across-the-board boost from last year's federal stimulus bill, which created the Build America Bonds (BAB) program.

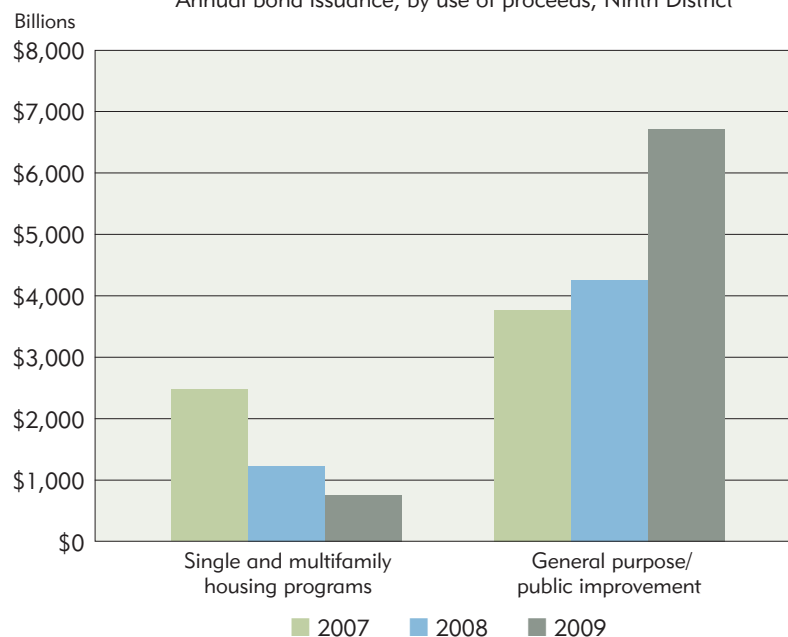
Most muni bonds are tax exempt, but BABs are taxable bonds issued for local and state infrastructure projects. Because they're taxable, BABs have to offer higher yields to attract buyers. The hook here is that the federal government pays the municipal issuer 35 percent of interest costs—effectively subsidizing both the issuer and the investor by lowering net issuer costs while matching and possibly beating net yields that investors can earn from tax-exempt or corporate bonds.

Given the subsidies, it follows that BABs have proven popular. The first Build America Bonds were issued last April, and they accounted for about 16 percent of the \$410 billion in municipal bonds issued in 2009. (Because they are purchased by private investors, BABs are counted in the Thomson Reuters annual data.) But that market share has increased over time. In the fourth quarter of last year, BABs made up almost one-third of all municipal bond issues.

Use of BABs in the district is both high and low, depending on how you measure. Minnesota and Wisconsin have been frequent issuers of BABs, ranking second and third (respectively, behind California) in the number of BABs issued nationwide in 2009, according to a January SIFMA report. However, BAB deals in both states are comparatively small in size; at \$443 million in Minnesota and \$781 million in Wisconsin, neither state cracked the top 20 in terms of the total value of BABs issued. South Dakota has issued \$141 million in BABs, North Dakota just \$22 million, and Montana has yet to issue its first BAB.

The expectation is for the BAB program to continue growing. A Congressional Budget Office report released in January noted that BAB participation "has

CHART 4 **More of this, less of that***
Annual bond issuance, by use of proceeds, Ninth District



*Includes all of Wisconsin and excludes the U.P. of Michigan
 Source: Thomson Reuters

Receding waters

*Irrigation on district farms has fallen in recent years—
and not just because of rain*

By JOE MAHON
Staff Writer

After years of letting irrigation water flow freely in their fields, Ninth District farmers have tightened the spigot. From 2003 to 2008, irrigation on farms and ranches decreased in district states, even as producers continued to reap bountiful harvests of corn, soybeans, wheat and other crops.

Much of the decline in both irrigated acreage and total water use occurred because of the return of rain after a dry spell, but an additional factor has helped to reduce water use: Operations that use the most water are using less on average than in the past.

Irrigation is crucial to agriculture in the dry, western reaches of the District—Montana and the Dakotas west of the Missouri River—but is also common in wetter eastern states, to boost crop yields when rainfall lags. In 2008, the U.S. Department of Agriculture (USDA) analyzed agricultural water usage, comprising on-farm sources such as wells and creeks as well as off-farm sources such as federally controlled rivers and reservoirs.

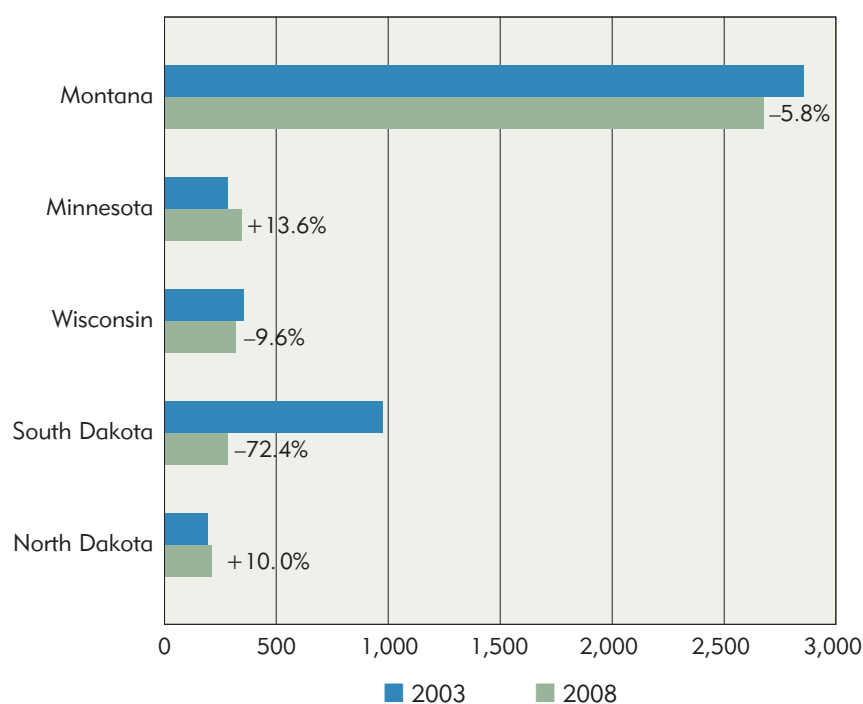
The Farm and Ranch Irrigation Survey found that, compared with 2003

figures, acres of irrigated farmland in Minnesota, Montana, the Dakotas and Wisconsin fell 3 percent. This decline reversed an upward trend in district irrigated acres from 1997 to 2003 and ran counter to the national trend, which saw irrigated acres dip in 2003 and then increase in the most recent survey (see Chart 1).

Total water usage dropped even more in the district; from 2003 to 2008, the volume of water applied (in acre-feet) in district states declined 18 percent. Nationally, water volume decreased 5 percent during the same period.

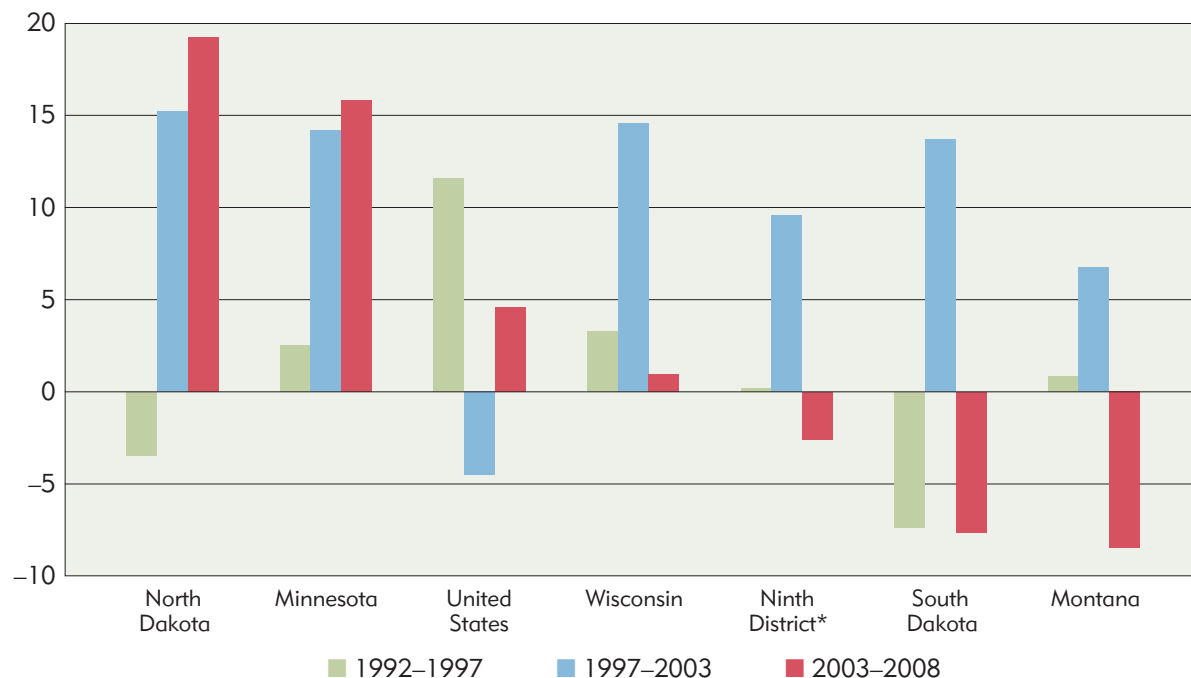
The most important driver of year-to-year fluctuations in irrigation is rainfall, or the lack of it. Peak levels of irrigation in 2003 coincided with a drought that was particularly severe in South Dakota and Montana. Subsequent easing of drought—2008 was relatively wet—reduced the need to irrigate, causing a drop in both irrigated acreage and water use. But there may be more to the decline in water use than the return of rain; district water usage in 2008 dipped about 1 percent below 1998 levels, despite robust growth in farm output in recent years. (From 2003 to 2008, district production of corn, soybeans and wheat increased 28 percent.)

CHART 2
Irrigation volumes also decreased
Acre-feet of water applied (1,000s)
and percent change from 2003 to 2008



Source: U.S. Department of Agriculture, Census of Agriculture, Farm and Ranch Irrigation Survey

CHART 1
Overall district irrigated acreage decreased from 2003
Percentage change in acres irrigated



*Includes all of Wisconsin and excludes the U.P. of Michigan

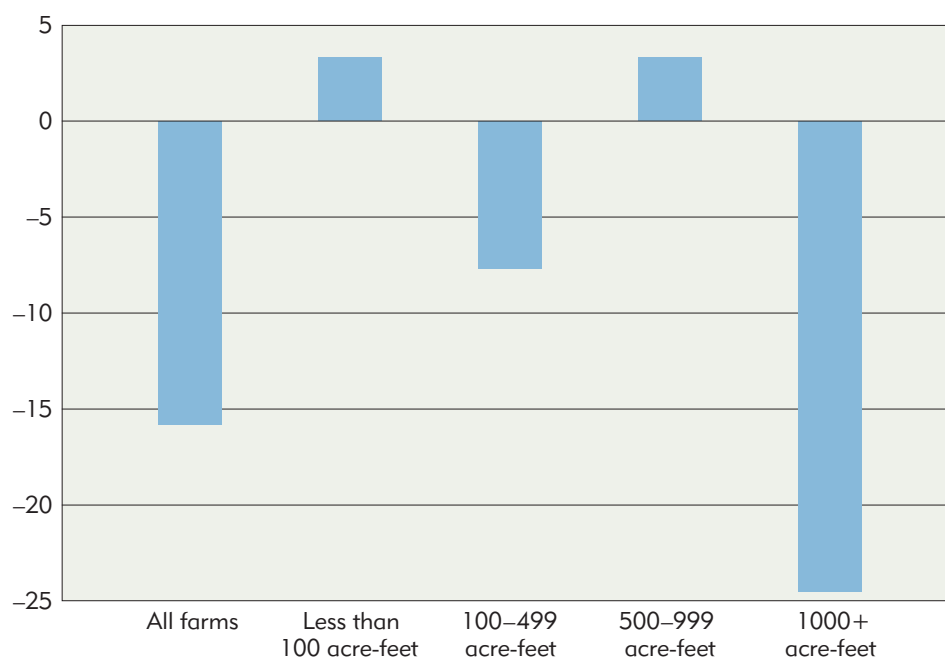
Source: U.S. Department of Agriculture, Census of Agriculture, Farm and Ranch Irrigation Survey

Much of the district decline in water use occurred in South Dakota; operators in the state applied 72 percent less water in 2008 than five years earlier (see Chart 2). Irrigation volume also declined in Montana. Drought was less severe in the eastern part of the district, so water use in that region didn't change much. In fact, it increased slightly in Minnesota and in North Dakota.

Because some crops demand more water than others, changes in the crops farmers plant can affect irrigation volume. But there's no evidence that changes in crop mix have anything to do with the falloff in irrigation between 2003 and 2008. The number of irrigated acres dedicated to corn, a water-intensive crop, jumped dramatically in district states over that period—56 percent in North Dakota and almost threefold in Montana. But irrigated acres of soybeans, another thirsty crop, declined. It's likely that the increase in rainfall after 2003 swamped any crop-related impact on water use.



CHART 3 **Heavy irrigators are using less water**
Percent change in water applied per acre on district farms,* 2003–2008



*Includes all of Wisconsin and excludes the U.P. of Michigan
Source: U.S. Department of Agriculture, Census of Agriculture, Farm and Ranch Irrigation Survey

More water, less waste

Beyond the impact of increased rainfall, another factor that has lowered water use in recent years is more effective irrigation by heavy users. Intensive irrigators—which also tend to be relatively large operations—can take advantage of economies of scale. Between 2003 and 2008, water applied per acre by the biggest irrigators fell, reducing their share of aggregate water use. In con-

trast, water use by farms applying less than 1,000 acre-feet was generally a wash (see Chart 3).

In Wisconsin, for example, water applied per acre fell more than 10 percent for all irrigators, but it fell more than twice as much on farms using more than 1,000 acre-feet of water. Meanwhile, water use per acre increased 15 percent among farms using between 100 and 499 acre-feet.

In North Dakota, although overall

water use increased, the average volume of water applied per acre by operations using 1,000 acre-feet or more fell by almost a quarter, while it increased 19 percent for operations using less than 100 acre-feet.

How have intensive irrigators cut their water consumption? By investing in technologies that conserve water. The irrigation survey showed that many big farms are switching from gravity irrigation systems to new sprinkler systems that apply water more precisely and are less prone to leakage. From 2003 to 2008, the area of district farmland irrigated by gravity systems fell 18 percent,

while the acreage watered by sprinklers increased almost 12 percent.

Upgrading irrigation systems can be expensive, and indeed the survey shows an increase in irrigation expenditures, particularly by large operations. The number of district farms spending more than \$75,000 (the highest value the USDA tracks) on irrigation equipment more than doubled between surveys.

Continued investment in water-saving equipment by farms and ranches in the district may lead to further reductions in irrigation—until the next drought, at least. **f**

Muni bonds from page 9

already risen to a level significantly higher than CBO's ... original estimates."

Some industry sources predict that Build America Bonds could reach \$100 billion to \$150 billion this year—or close to 30 percent of all municipal bonds. The BAB program is also keeping a lid on rates for traditional tax-exempt municipal bonds because it is providing an attractively priced alternative for both buyers and sellers of municipal bonds. Matt Fabian, managing director of Municipal Market Advisers (MMA), a bond market research firm, said, "I think it's pretty clear that [BABs] have been replacing, on almost a dollar-for-dollar basis, funds that would have been sold tax exempt. So they are contributing to a

scarcity situation" for tax-exempt bonds. If that's the case, the BAB program hasn't necessarily expanded the municipal bond market as funds flow from one muni bond type to another.

Clouds or sunshine?

How long these conditions and circumstances last in the muni bond market is an open question, in part because some countervailing forces are at work.

For example, though defaults in this bond sector are still rare, particularly compared with corporate bonds, they are nonetheless increasing. In 2007, less than \$1 billion in municipal bonds defaulted. In late January, Fabian of

MMA estimated that \$16 billion worth of municipal bonds was in some form of payment distress, including \$5 billion "where investors actually missed getting paid."

But pushing in the opposite direction is the BAB program. Although the program is slated to run only through the rest of this year, in late January, President Obama proposed making it permanent, with a small reduction in the subsidy to 28 percent starting in 2011. That's a positive development for issuers and investors alike but an extra burden on taxpayers, who pay the program's annual subsidy of \$2 billion to \$3 billion, an amount that will grow as more BABs are issued. Total costs, how-

ever, are somewhat offset by federal taxes on income earned from these taxable bonds. In budget documents, the Obama administration has estimated total net BAB subsidies of \$5.6 billion through 2015.

At the same time, inflation fears are growing and the financial condition of state and local governments is in tatters. Estimates for the upcoming fiscal year predict that states face cumulative budget deficits of between \$150 billion and \$180 billion, some of which likely will be papered over by bonds from issuers whose creditworthiness has clearly deteriorated. All of these factors put upward pressure on the rates municipal issuers will have to pay to find buyers. **f**

MILC: Nectar for struggling dairy farms



By WONHO CHUNG
Research Assistant

JOE MAHON
Staff Writer

The market for milk has gone sour. Persistent low prices over the past year have forced increasing numbers of Ninth District dairy farms out of the industry. However, those still in business have received a helping hand from a relatively new government subsidy program.

The steady decline in the number of dairy farms in the district over the past decade mirrors a national trend. From 2002 to 2007, Minnesota and Wisconsin saw the number of dairy farms decrease about 15 percent and 11 percent, respectively. Other district states produce much less milk, but they experienced declines of a similar magnitude. Montana, where a number of cattle ranchers have taken up dairy production as a sideline, was the exception (see Chart 1).

Declining numbers of farms has been a theme in U.S. agriculture for a long time. However, between 2002 and 2007, the total number of farming operations, nationally and in most district states, rose slightly (see “Not your father’s farm,” *fedgazette*, May 2009). The fact that dairy farmers continued to leave the business, bucking the overall trend, speaks volumes about their plight.

The loss of dairy farms traces back to milk prices, which have been on a roller coaster in recent years, and high input costs.

Milk prices attained record highs in 2007 and remained elevated for most of 2008. But later that year, the national

average price of milk fell about 40 percent over a six-month period before creeping back up (see Chart 2). The National Milk Producers Federation attributes this decline largely to a sharp drop in international demand during the recession that left the domestic market awash in milk.

Unfortunately for dairy farmers, the recent and extended period of high milk prices was not the cash cow it might seem because of an input-cost squeeze. The price of feed like alfalfa and corn skyrocketed in 2008, negating much of the profit potential of high milk prices. Then milk prices came down faster than input costs. “It has put a big cash squeeze on the producer,” said Tom Ludy, founder of Lake Country Dairy in Turtle Lake, Wis.

Some dairy producers have managed to keep afloat in this turbulent market by taking advantage of government subsidy programs. The newest of these is the Milk Income Loss Contract, or MILC. When Congress added MILC to the stable of established dairy support programs in 2002, it was meant as a temporary measure to tide dairy operations over through tough times. But the program was reauthorized in 2005 and later included in the 2008 farm bill.

The program was envisioned as a “next-generation” farm policy that partially compensates farmers for low prices instead of manipulating the market through government purchases of dairy products. MILC goes into effect automatically when the market price of milk falls below a certain target—currently \$16.94 per hundredweight (cwt.). Producers are paid 45 percent of the difference between the market price and the target for each hundred pounds of

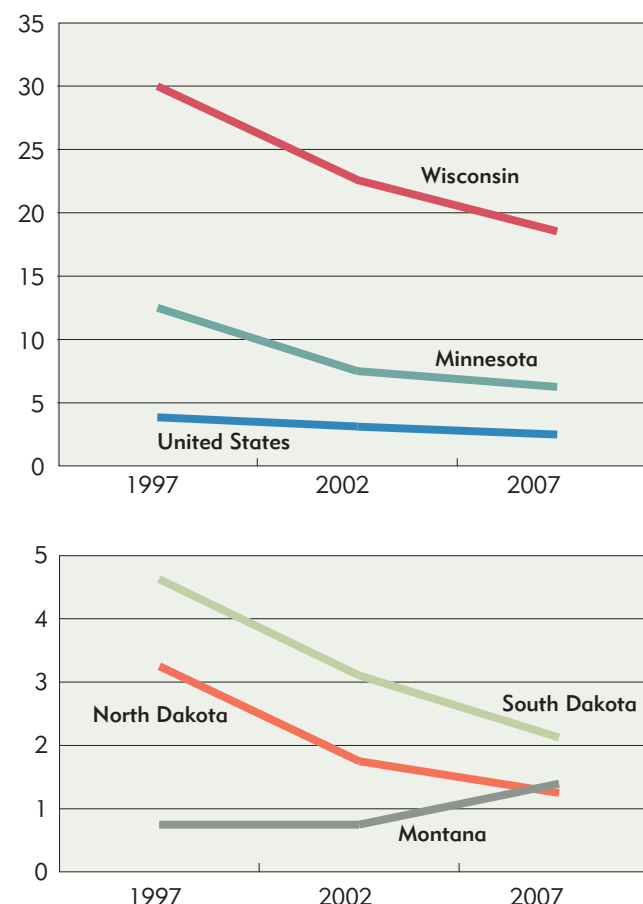
milk they produce, up to a production cap intended to ensure the payments benefit smaller producers. (For more background on MILC and other dairy programs, see “Got MILC?” *fedgazette*, November 2004.)

The 2008 farm bill modified MILC, increasing the production cap from 2.4

million pounds a year to almost 3 million. More important, given the current input-cost crunch, compensation rates were changed to reflect not only milk prices but also the cost of production inputs. If the price of the amount of alfalfa, soybeans and corn required to produce a hundredweight of milk

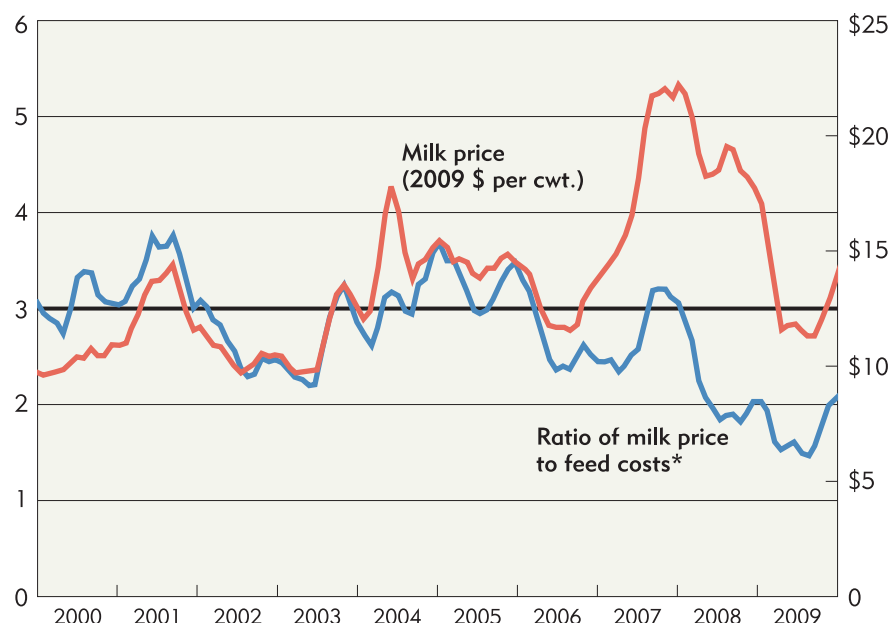
CHART 1
Dairy farms decreased relative to total farms nationally and in most district states

Operations with milk sales as a percent of total farm operations



Source: USDA, Census of Agriculture

CHART 2 Milk prices have been volatile and haven't kept up with feed input costs



* The milk feed-price index is calculated by the USDA as the ratio of the milk price to feed costs required to produce it. A value of 3 is the estimated break-even point.

Source: National Agricultural Statistics Service, USDA

exceeds a target of \$7.35, payments to dairy producers increase by 45 percent of the difference.

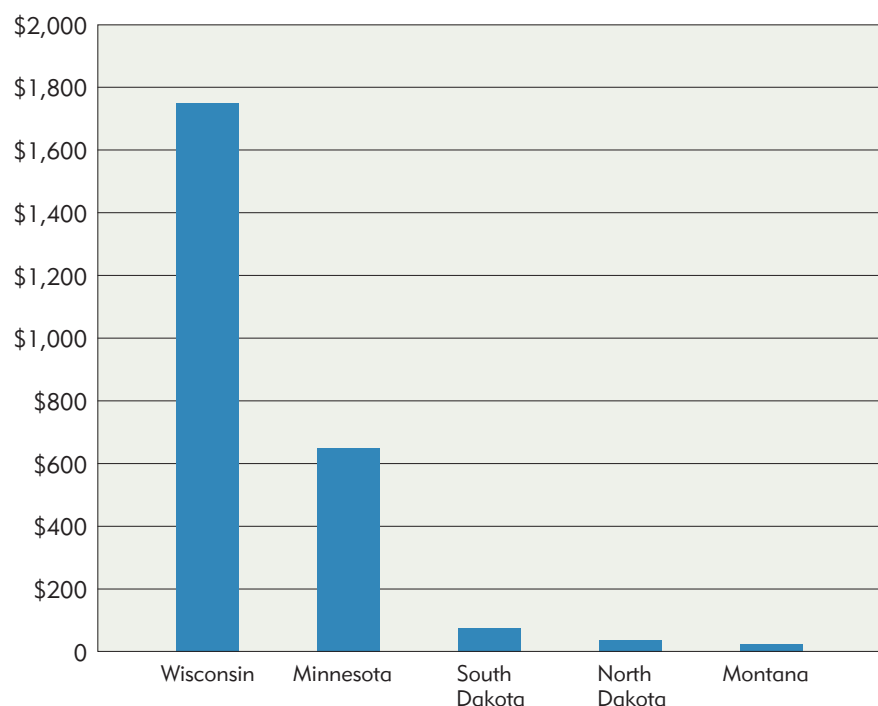
MILC payments are only triggered when the price of milk drops below its target. But due to high input costs, recent market conditions have resulted in higher payments for district dairy producers. Chart 3 shows dairy payments made to district farmers in fiscal 2009, from February, when payments were triggered, through September. (Payments also went out in October and November, but those data were not available.) Last December, milk prices rose above the target, halting payments.

Wisconsin gets a giant share of MILC

payments, partly because it's a major milk producer. But Wisconsin also receives more than double the payments disbursed to California, despite the fact that it ranks second behind California in national milk production. This disparity is due to the concentration of small milk producers in Wisconsin (and in the rest of the district).

In 2007, more than half of producers in district states had fewer than 200 milk cows; the national figure was 28 percent. Dairy farms tend to be larger in western states—in California only 1 percent of dairy producers had fewer than 200 cows. Because a dairy farm needs on average only 165 cows to butt up against

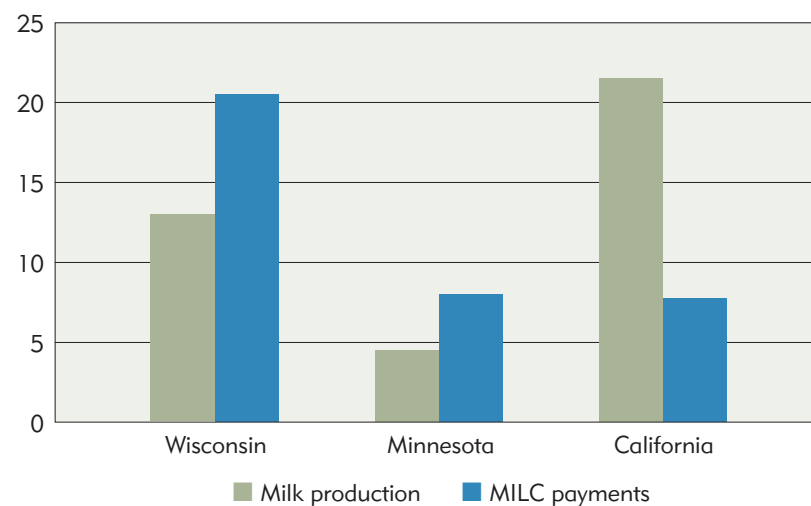
CHART 3 MILC payments to district states, 2009
Millions of dollars



Source: Farm Service Agency, USDA

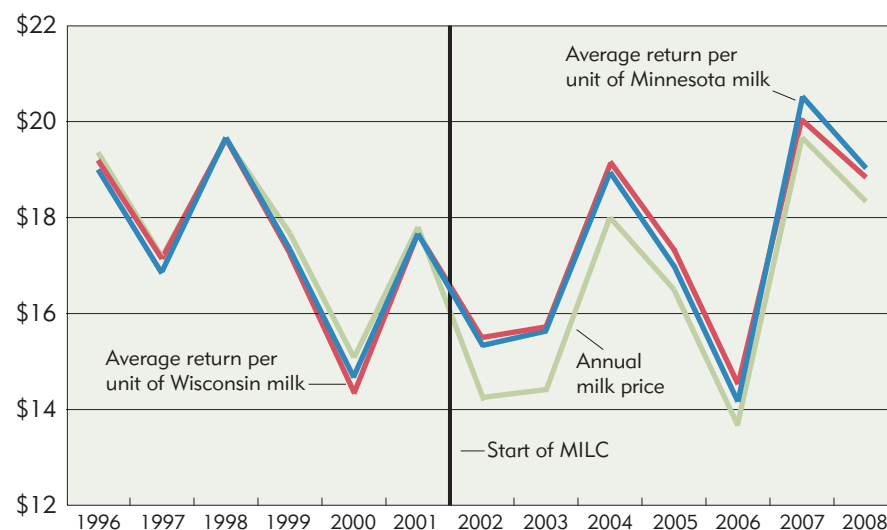
CHART 4 District states receive an outsized share of MILC payments

Percentage of national milk production and MILC payments, 2002-08



Sources: National Agricultural Statistical Service, USDA; Farm Service Agency, USDA

CHART 5 MILC payments cushion lower milk prices
2008 dollars per cwt.



Source: Economics, Statistics and Market Information System, USDA

MILC's annual production cap, the program doesn't cover much of the output in states dominated by large operations. This has been true throughout the life of the MILC program, as illustrated in Chart 4.

Comparing MILC payments for 2009 with previous years puts in perspective the recent suffering of dairy farmers. From 2002 through 2008, Wisconsin received about \$73 million annually (\$511 million total) in MILC payments. In fiscal 2009, it received \$175 million. This payment ratio was similar nationally and in other district states, and far exceeds the expectations of policymakers when the program was launched.

Assessing the impact of MILC payments on dairy farm income is difficult, but a look at average returns of dairy operations suggests that it's significant. Chart 5 shows that returns from dairy

operations move closely with milk prices. However, average returns for both Minnesota and Wisconsin dairy farmers have been higher compared with milk prices since MILC went into effect in 2002. This is particularly the case when milk prices are low.

Among other things, the MILC program acts as a safety net for smaller producers in the district. While many dairy farmers choose to get out of the business even in prosperous times, the program has shielded them to some extent from the impact of low dairy prices. For better or worse, it's likely that without it, even larger numbers of dairy producers in the district would have shut down their operations. **f**

Higher education's melting pot

International students surging at Ninth District universities and colleges

By RONALD A. WIRTZ
Editor

Higher education in the district has a more international flavor than ever before. Despite a terrible start early in the decade, the number of foreign students has increased significantly at district colleges and universities during the past decade. Although growth was widespread in the region, a few instances stand out, including dramatic increases in North Dakota.

A countertrend is also afoot: The number of district students studying abroad has grown considerably faster this decade than the rate of incoming international students.

U.S. degree or bust

The U.S. higher education system has long been a magnet for foreign students. Their numbers have risen steadily (see Chart 1), and the international share of U.S. college enrollment climbed slowly from about 1.6 percent in the early 1970s to its current record high of 3.7 percent in 2008–09.

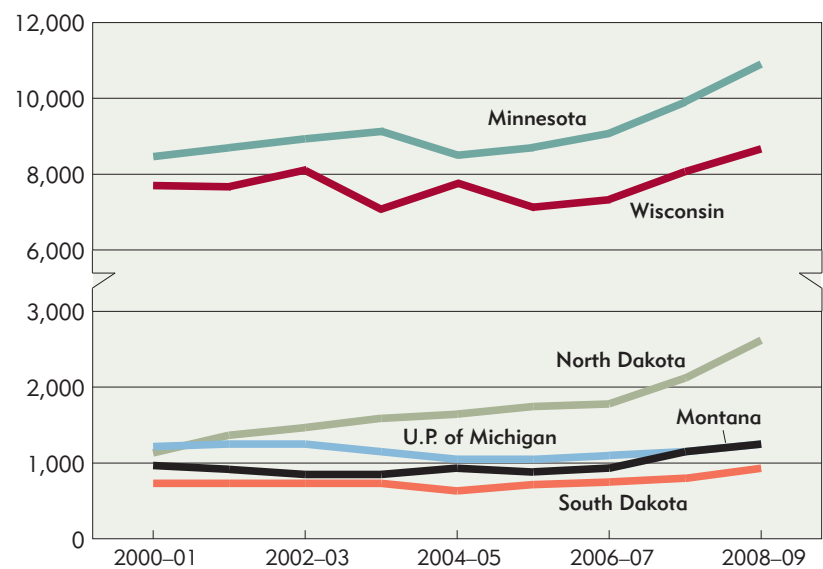
The only significant hiccup in this upward climb occurred earlier this decade. In the fall of 2003, foreign student enrollment declined for the first time since the early 1970s. Experts widely attribute the decline to the terrorist attacks of Sept. 11, 2001, which tightened national security and immigration policy and reportedly had a chilling effect on foreign student applications to American universities.

That hesitancy began to change course about mid-decade, and foreign student growth at the district and national levels resumed with gusto in subsequent years. Virtually all of the net growth in the district this decade has occurred since the 2006–07 academic year, according to data from the Institute of International Education (see Chart 2; historical figures for the Ninth District are unavailable before 2000–01, and 2008–09 enrollments are the most recent year available).

The increase in international students is due in part to the fact that colleges and universities “are more actively recruiting international students, especially undergraduate students,” according to Sam Gingerich, system vice president for academic affairs with the South Dakota Board of Regents. Fast-growing countries like China and India are straining to expand their higher education systems to accommodate a growing middle class, and “more families have the resources needed to look abroad,” he said. The motivations for such recruiting vary by campus, but the attraction of high-quality students, increased campus diversity, higher tuition rates (foreign students often pay thousands of dollars more in tuition than state residents) and other factors play a role.

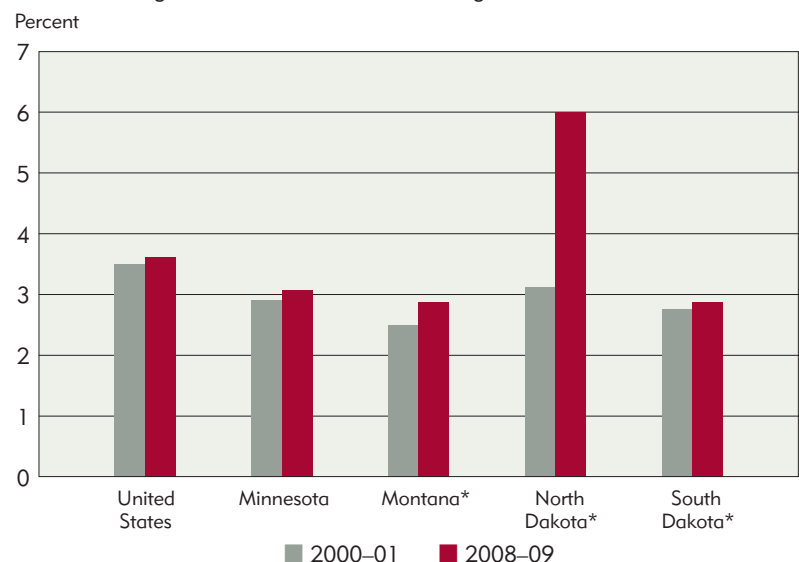
The upward trend in foreign students runs parallel to enrollment growth across all of higher education, including a big recession-induced increase in the past few years (see more discussion of

CHART 2
Some district states see big increase
Number of international students



Source: Institute of International Education

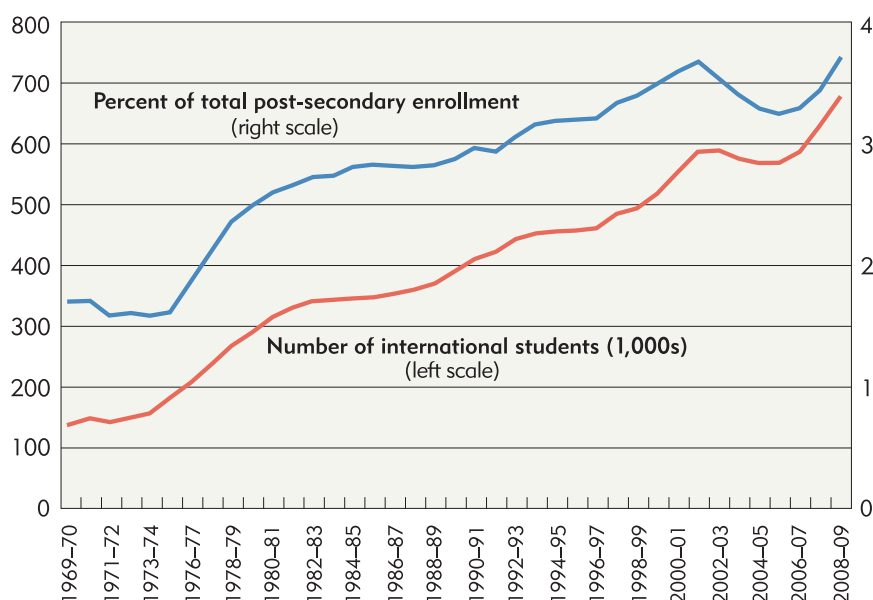
CHART 3
District keeping up
Foreign students as a share of total higher education enrollment



*Percentages based only on public institutions; Wisconsin statewide headcounts were not available.

Source: Institute of International Education

CHART 1
Foreign students in U.S. rising
Number of international students and percent of total post-secondary enrollment



Sources: U.S. Department of Education and Institute of International Education

this overall trend in the November 2009 *fedgazette* online at minneapolisfed.org). Direct comparisons of the two enrollment populations can be complicated because of a lack of precise data and different measuring sticks (headcount vs. full-time equivalent). But it appears that the increase of foreign students since 2000–01 outpaced that of total students in the district by roughly 6 to 8 percentage points, with foreign enrollments growing by almost 26 percent.

Although more recent comprehensive figures are not yet available, it appears that foreign enrollments con-

tinued to rise this past fall. The four campuses of the University of Minnesota, for example, saw their international freshman class grow by 13 percent last fall, compared with an overall freshman class that grew by about 6 percent, according to university figures.

Schools in the Midwest and Great Plains also appear to be closing some of the visibility gap with their peers nationwide. For starters, district growth of foreign students over the past decade was higher than the nation's (25.8 percent and 22.6 percent, respectively). While the district's ratio of foreign students to

total enrollment is a bit lower than the national average, the gap narrowed (see Chart 3). North Dakota's proportion of foreign student enrollment rose sharply, putting it head and shoulders above the national average.

Name that mascot

International students have spread themselves throughout the district, resulting in some apparent quirks. As you might expect, many foreign students hail from Canada. But in Montana, Saudi Arabia runs a very close second to Canada. And the tiny—and poor—country of Nepal is a top-five source of students for Minnesota and both Dakotas.

A modest handful of public universities (13) enroll almost two-thirds of foreign students in the district. This group saw foreign enrollment rise by 32 percent since 2000 (see Chart 4). However, the district's largest—and most internationally visible—universities saw more modest growth: 23 percent for the University of Minnesota-Twin Cities and just 8 percent at the University of Wisconsin-Madison. Instead, international students were migrating to the likes of Dickinson State (N.D.), North Dakota State, Michigan Tech, Minnesota State-Moorhead and St. Cloud State (Minn.), all of which saw growth of at least 40 percent and sometimes much higher.

Not all district institutions have had the same success. Lake Superior State, in Sault Ste. Marie in the Upper Peninsula of Michigan, saw a 23 percent drop from 2000–01 to 2008–09; Marquette University, a private Jesuit school in Milwaukee and the largest private-college destination for international students in any district state, saw a similar decrease. Among large schools, Montana State joined UW-Madison with a single-digit increase over this period.

In fact, a fair portion of the district's growth is due to the outlier performance of North Dakota; it is the only district state that did not experience a lull in the early part of the decade (see Chart 2), and its overall growth of 131 percent far outstripped that of the district and nation.

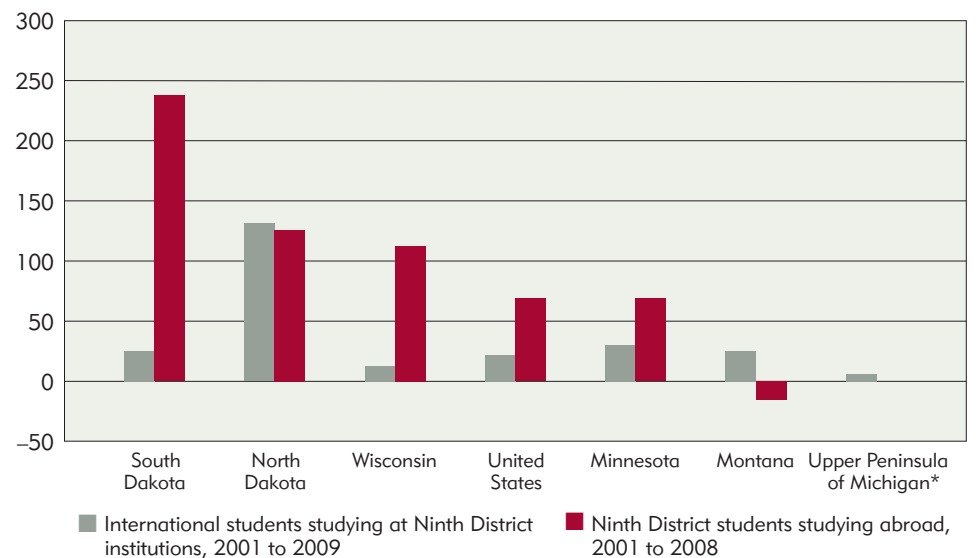
According to Michel Hillman, vice chancellor for academic and student affairs for the North Dakota University System, the state's success is a byproduct of an effort to raise awareness of the opportunity and give individual campuses greater flexibility and incentive to market themselves internationally. There has been no top-down initiative from a central office—well, there was, but it was never funded, Hillman said. Instead, campuses like Dickinson State “made it a priority to recruit [international] students.”

The campus is home to a significant Mongolian population, Hillman said. Research universities tend to attract highly educated students from countries like China—the largest source of foreign students in the state—where research is a top priority.

In terms of marketing, universities typically partner with other organizations “with their feet already on the ground” in other countries, Hillman said. For example, if a state or federal trade office organizes an overseas trade expo, a campus (or several) might host a booth to attract potential students or their parents.

The United States is still the prime destination for most international students, though other countries are making inroads, Hillman said. While some might think North Dakota is a figurative and literal world away, “if you're a parent in Nepal and don't want to send your kid to a busy, urban school” and instead prefer a “smaller, more welcoming, safer environment, then North

CHART 5 **Big growth in study abroad**
Percent change in incoming international students and outgoing students studying abroad



*Data for students studying abroad not available
Source: Institute of International Education

Dakota and South Dakota start to become pretty attractive.”

All abroad

A related trend in international students is those from the district who go abroad to further their education.

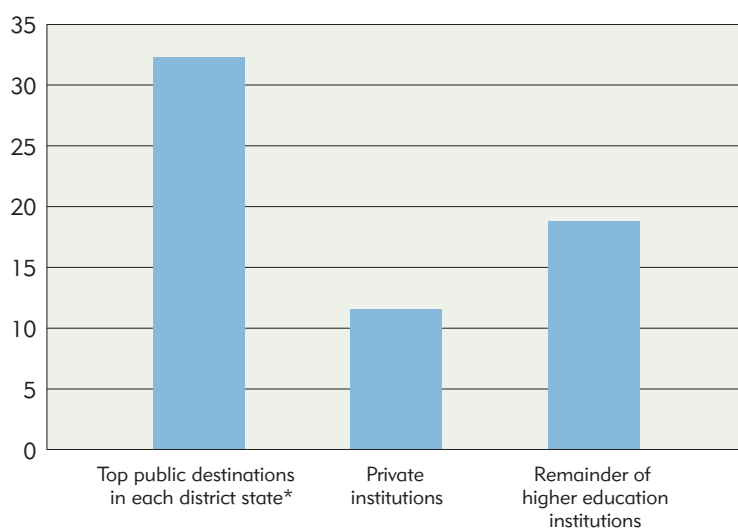
The number of district-based students studying in other countries has grown much more steeply than the inflow of foreign students, though the total number abroad is still about 25 percent lower (see Charts 5 and 6). Minnesota sends a much higher proportion of students abroad—2.7 percent of total enrollment, compared to less than 1 percent for Montana and North Dakota. The goals and aspirations of these two student populations in ventur-

ing abroad are quite different. American students typically use study-abroad programs to get some short-term international experience—a semester, oftentimes less—whereas foreign students come to U.S. institutions to earn a degree and are much more likely to remain in the United States afterward.

Gingerich, from South Dakota, said the state's campuses have created more study-abroad programs in an effort to meet the student demand “for shorter-term experiences, primarily to enrich their college experience generally or, in some cases, their program of study. ... Very few end up studying abroad for a full year, and even fewer graduate from a foreign institution.”

CHART 4 **Foreign students spreading out in Ninth District**

Percent change in international student enrollment by type, 2000–01 to 2008–09

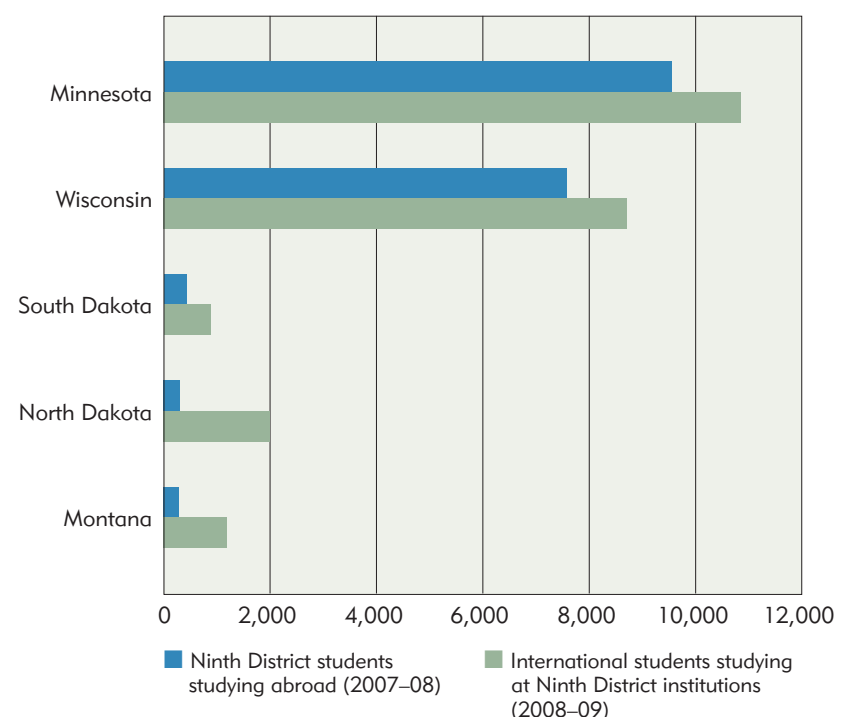


*13 total public institutions, including the institution with the largest international enrollment in each district state (including the U.P. of Michigan and all of Wisconsin), and all other public institutions that enrolled at least 400 international students in 2008–09.

Source: Institute of International Education

CHART 6 **For district, more student imports than exports**

Total enrollment from international programs, most recent academic year



Source: Institute of International Education

Public Affairs
Federal Reserve Bank of Minneapolis
90 Hennepin Avenue
P.O. Box 291
Minneapolis, Minnesota 55480-0291

Change Service Requested

Presorted
Standard
U.S. Postage
Paid
Permit No. 2235
Minneapolis, MN



Roads and Bridges

April 2010

