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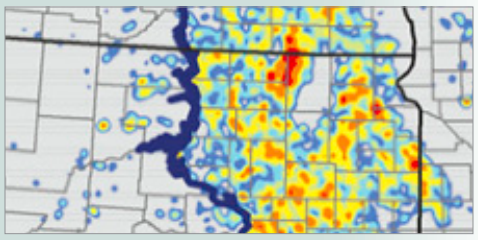
More on the Fiscal Oil Boom …



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… now the real work begins

Still in its infancy, the Bakken oil boom has spawned economic activity and tax revenue scarcely imagined even a few years ago. Now North Dakota is striving for the right balance in addressing short-term needs, fiscal security and long-term economic development

By RONALD A. WIRTZ
Editor

By now, surely you've heard of the oil boom in North Dakota. You know: jobs aplenty, high wages, hefty royalty checks for landowners and crying babies.

Crying babies?

While many obvious economic benefits flow from the Bakken oil boom, it's akin to a newborn baby, who brings excitement and joy to the whole family. But as any parent will attest, there is an awful lot of work involved, from constant feeding and diaper changes to sleepless nights and an endless vigil over the little one's health and safety.

In a similar way, local communities and the state Legislature are realizing that oil production and its concomitant economic activity and wealth come with a laundry list of things to fix and otherwise spend money on, such as crumbling roads, overwhelmed water and sewer systems, packed schools, and shortages of housing and community services like parks and emergency personnel that most people outside the region take for granted.

Connie Sprynczynatyk, executive director of the North Dakota League of Cities, likened the development challenge facing western communities to having a top-10 list of needs, "and all of them being number one." And because oil and gas tax revenue flows first to the Capitol, the state Legislature "is like being a mother of 12 kids, and they all want attention."

Fortunately, state coffers are overflowing from oil and gas tax revenue as well as strong growth—thanks in no small part to oil activity—in sales and income taxes paid by individuals and corporations. In the recently passed budget for 2013-15, total general fund spending is expected to reach $6.9 billion—almost 70 percent more than in the previous biennial budget.

Continued on page 2

Fiscal oil boom from page 1

"The state is in an enviable position because it can map its own course," said Nancy Hodur, an economist at North Dakota State University (NDSU) who has done extensive research on the economic activity and effects of the oil boom. "There is tremendous opportunity for economic development if we do this right."

But as is often the case, the devil is in the details. The challenge facing North Dakota is multifaceted. Local communities are begging for financial help to deal with the heavy impacts born from oil and gas development. The sheer scale of activity in the oil patch would itself be a challenge for any region, but it is compounded by the lack of capacity in this rural part of the state and by a state funding system in which the provision of resources to deal with oil-related development can lag on-the-ground effects by two years or more.

Over the past several legislative sessions, lawmakers in Bismarck have unhinged the lid on public spending and crafted a complex allocation system for oil and gas revenues to help local communities deal with immediate impacts while also setting money aside for rainy days, including ones well into the future.

Inevitably, despite the financial largesse, not everyone is happy. The biggest disagreements concern how much money is reaching oil-impacted areas. While such funding has steadily increased, "there is still a pretty significant shortfall. Communities need more help with critical services," said Hodur. "The infrastructure is so undersized, you'd be hard-pressed to overbuild." She noted that U.S. Highway 85 through Williston—the busiest road in the state, carrying "tens of thousands of trucks"—is still a two-lane highway. "It's the deadliest road in the state."

Many oil patch sources concurred with Hodur's assessment. But the state also has to keep an eye on the future if it is to avoid the dreaded "resource curse," where oil discoveries do more harm than good to local and state economies. That means state lawmakers have to worry as much about long-term economic development and diversity as they do about potholes and park benches. That makes for a lot of debate, as Sprynczynatyk has witnessed at the Capitol.

"You could ask six different legislators and get six different opinions" about how oil revenues should be spent, she said. "It's an easier, shorter [legislative] session when there's no money to spend."

A heavy oil footprint

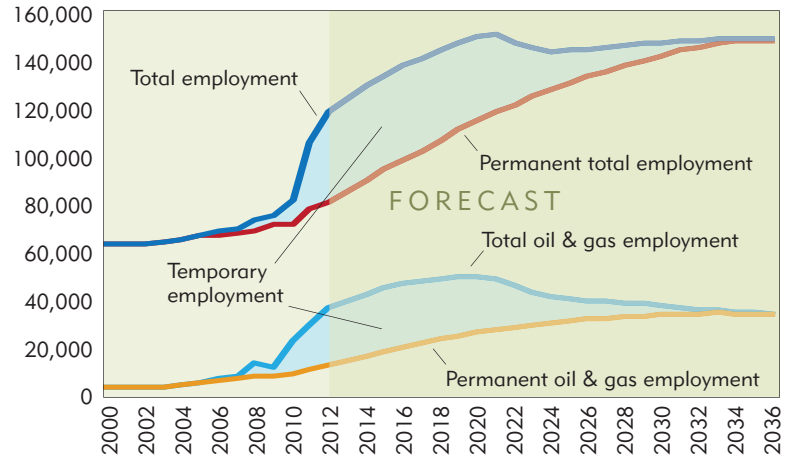
It's easy to see the benefits of oil activity in North Dakota—unemployment rates are exceptionally low, wages are rising strongly and the area is awash in economic activity and, frankly, money. At an April conference, former Montana Gov. Brian Schweitzer called the Bakken "a millionaire maker."

Given less attention—especially outside oil-impacted areas—are negative effects that have accompanied rapid oil and gas development in western North Dakota and eastern Montana. (Montana, for its part, has experienced much less of an oil boom and little of its fiscal benefits, but has experienced considerable impact as a result of being across the border from the Bakken's core production area.)

Chart 1

A gusher of jobs

Total and petroleum sector employment
Forecast for state planning regions
1, 2 and 8 (roughly, the Bakken region)



Source: Agribusiness and Applied Economics, NDSU

The widespread and capital-intensive nature of horizontal drilling and fracking brings more of everything—including more wells, which means more drilling, which means more equipment and supplies of every sort, transported on trucks that are multiplying like jackrabbits.

Development in the region presents bigger challenges for communities built above deep shale formations than comparable development near conventional oil fields. The widespread and capital-intensive nature of horizontal drilling and fracking brings more of everything—including more wells, which means more drilling, which means more equipment and supplies of every sort, transported on trucks that are multiplying like jackrabbits. All of this activity requires more workers, who need housing and other services in sparsely populated regions that are better equipped for prairie dog colonies than residential subdivisions.

Already, the region has created tens of thousands of jobs in the petroleum sector and across the regional economy (see Chart 1). Populations are expanding as workers bring their families or make new ones. From 2000 to 2010, the population of Divide County—in the very northwestern corner of North Dakota—actually fell by 9 percent, to about 2,000. Assuming the current pace of development continues, the county population is projected to double by 2015, and then rise further to about 5,600 by 2020 (see Chart 2).

Sprynczynatyk said it was "difficult to make blanket statements" regarding community impact. "Some communities are overwhelmed. Some have the capacity to respond. All cities have some concerns about infrastructure. … But because North Dakota hasn't always been growing, the capacity isn't there."

What infrastructure is in place was designed to support a fraction of the activity in the region today. Roads, in particular, are taking a beating from convoys of trucks carrying water, frac sand and other supplies to hundreds of well sites. Last year, the Upper Great Plains Transportation Institute identified $521 million in road needs by the end of 2014.

And that's likely just the tip of the oilberg. Dean Bangsund is an economist at NDSU who has worked on several recent Bakken impact studies with Hodur. He noted that the state had about 3,000 to 3,500 active wells before the boom. This spring, there were nearly 9,000, and that's still just the warm-up phase. Estimates from the state Department of Mineral Resources suggest that the total well count will reach 40,000 to 45,000 over the next two decades.

"Now the gorilla is starting to roost. Now there are huge, huge development challenges," said Bangsund. The physical demands and time scale—the breadth of things that need attention, and the time necessary to do them—"is something no one has dealt with."

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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.

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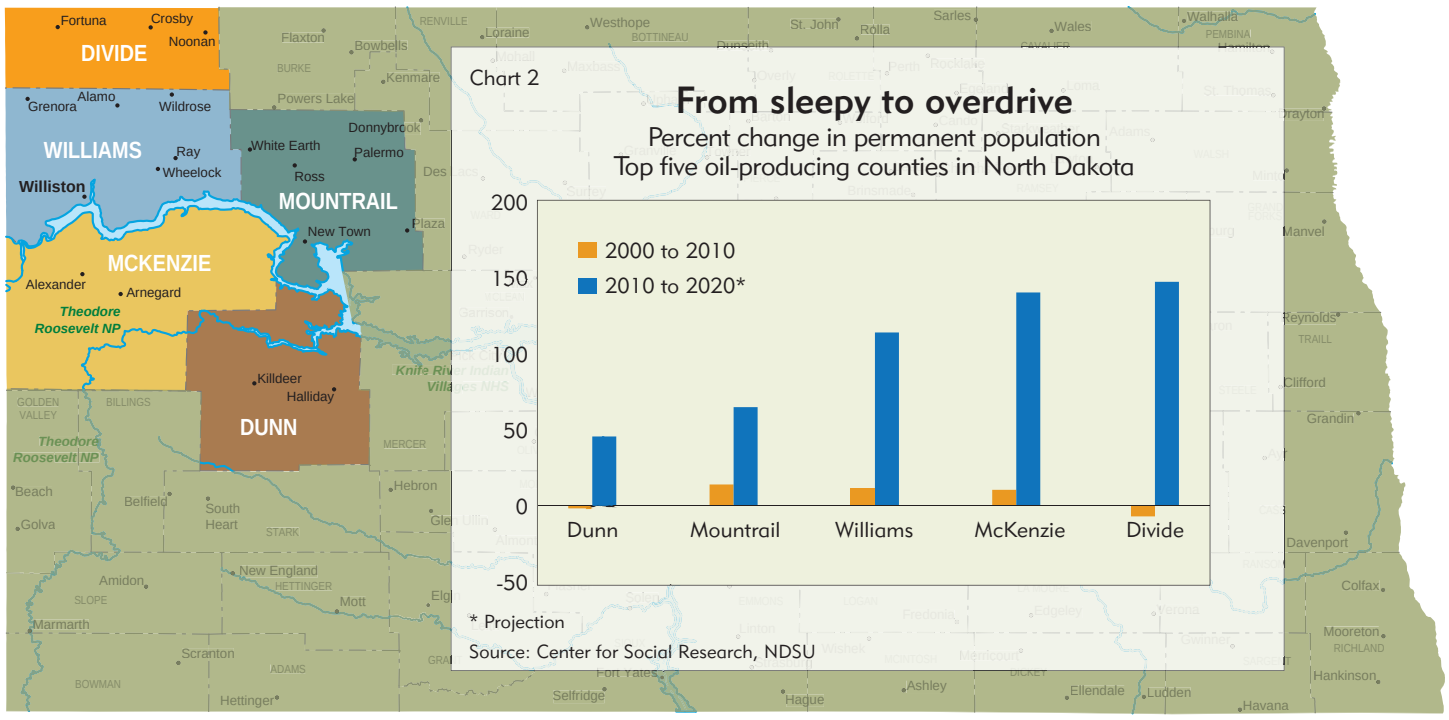


The city of Arnegard "is smack in the middle of the Bakken" with a population just over 100 people. But it has a service population of 1,600. "They don't have public water; their sewer system is overrun and outdated. They were less than underprepared" for the deluge of service demands.

—Deb Nelson
Vision West ND

From Yay! to OMG!

There are several stages of community response to shale oil development, according to Richard Gardner, a consultant with Bootstrap Solutions of Boise, Idaho, and senior fellow at the Rural Policy Research Institute at the University of Missouri. He has done work for communities grappling with the effects of energy development from North Dakota to Pennsylvania to Texas.

Gardner said the first development stage is enthusiasm (we struck oil!), followed by uncertainty (is this for real?), then crisis (we need a plan) and finally adaptation (here's the plan). "Sometime in the last year or two, there has been a transition from uncertainty to crisis," Gardner said.

A population rise of 1 percent to 3 percent per year is considered robust, said Gardner. At 4 percent to 5 percent, "things are busting at the seams," he said. "You've got McKenzie County growing 8 percent per year for the next 10 to 15 years. How can they possibly keep up?" In 1983, school enrollment in the McKenzie County School District was just over 1,000. By 2008, it had slowly eroded to 512. This year, enrollment is back to 868. February estimates by NDSU project school enrollment almost doubling by the 2016-17 school year to more than 1,600 students. In a very rural county, Gardner said, "they have low capacity in everything, and they can't keep up with this."

Oil patch communities also do not have the benefit of time, Gardner said. These communities "are suddenly doing a 180, and they are very rapidly being thrust from a sleepy community to an industrial region overnight."

The response to the boom by individual communities is often uneven, depending on factors like staffing and financial capacity. As local communities race to expand infrastructure and other services, some "are bonded to the gills" and don't have the capacity to take on necessary upgrades to city infrastructure, said John Phillips, a real estate project developer with Lutheran Social Services and former planner for the city of Beulah.

In January, a report commissioned by the city of Williston looked at infrastructure needs six years out. It identified more than $625 million in infrastructure upgrades, including $102 million for storm water, $110 million for drinking and wastewater and $259 million for transportation. The city was rewarded for that planning effort by having its bond rating lowered by Standard & Poor's only months later over fears of projected budget deficits that could deplete cash reserves.

It's even worse for small communities, because it doesn't take much to overwhelm their capacity, and they get very little funding because formula-based state aid goes mostly to counties and regional centers like Williston and Dickinson. So they are left to hope that some aid passes down the ladder from the county, said Deb Nelson, manager, Vision West ND, a 19-county consortium of governments and other interests created expressly to help the region cope with oil impacts.

The city of Arnegard "is smack in the middle of the Bakken" with a population just over 100 people. But it has a service population of 1,600. "They don't have public water; their sewer system is overrun and outdated. They were less than underprepared" for the deluge of service demands, said Nelson. "The needs are so much greater than the funding. Unless you're here and experience it, you don't have a good idea of what's going on."

Hodur, from NDSU, called western North Dakota "a socio-economic petri

Continued on page 4

Oil taxes 101

Oil and gas revenues in North Dakota are generated in several forms. The largest of these comes from an 11.5 percent severance tax on the gross value of oil and gas produced at the wellhead.

This tax is actually two separate taxes; a 6.5 percent extraction tax and a 5 percent production tax. Technically, the production tax is not a severance tax but rather a substitute for local property taxes, and helps fund direct aid to producer counties. However, the percentage of tax revenue that is returned to producer counties is small, and as such it acts more like a severance tax because most of the money stays at the state level.

The state also receives money from oil activity on state-owned land. First, the state receives lease-bonus revenue — one-time payments from producers for exclusive rights to drill on designated parcels of public land. Once production starts, the state (actually, a state trust) earns royalty payments equal to 12.5 percent to 18.75 percent of gross production value, depending on the county of extraction. Producers then pay severance taxes to the state on the remaining percentage of production value. So a $100 barrel of oil produced on state lands in core Bakken counties would incur a royalty payment of 18.75 percent, along with an 11.5 percent state severance tax on the remaining value of $81.25.

Fiscal oil boom from page 3

dish. There's just a lot we don't know" about the scale and impact of oil activity in the region and how to handle it in a way that will provide long-term local and state benefits.

Measuring the full impact of oil development, calculating the costs and planning the necessary community response "is a very difficult process to get your arms around and capture. The issues are bigger than any of us imagined," said Nelson. Efforts to date have identified housing, transportation and roads, water, emergency services and day care as the most pressing needs. But the group has "not yet begun putting together the fiscal impact of any of the top five needs of our region," Nelson said.

The process of identifying just the scale of needs is difficult, to say nothing of calculating costs or planning for implementation. The Upper Great Plains group identified $7 billion in necessary transportation investment over the next 20 years: half in oil-producing counties, half outside. While certainly useful, the number is bound to change; the group's 2010 estimate for two-year road investments grew 50 percent by 2012, the result of an 80 percent increase in projected wells along with rising costs for gravel and pavement.

Estimating both current capacity and long-term need is challenging for any public service. For example, much of the region is served by volunteer emergency and fire services, and reports have shown that volunteer rates are down. "They are running into a large increase in calls, and it's very difficult [for volunteers] to be called out constantly and still hold a full-time job," Nelson said.

But figuring the cost of upgrading emergency response services across the Bakken region is a daunting prospect. Vision West conducted an initial study of emergency services to determine gaps and overlaps. This might sound simple, but the region is "so large and so very rural … [that] we have not been able to put a financial cost to the needs because we haven't been able to fully capture where the gaps are largest, and we haven't yet been able to identify workable solutions for this huge service area," Nelson said.

The group is bringing in experts to help study the matter and is holding a series of symposiums through October in hopes of coordinating regionwide improvements. "What we are experiencing is like drinking from a fire hose. We have to figure out how to make the hose smaller, lower the water pressure or drink faster—all before we drown," Nelson said.

The state has gotten in the laudable habit of squirreling money away in rainy-day and permanent trust funds. It also has been cautious in committing to permanent spending programs, preferring one-time expenditures—much of it to deal with oil impacts—that are not automatically assumed into future budgets.

Gusher of tax revenue

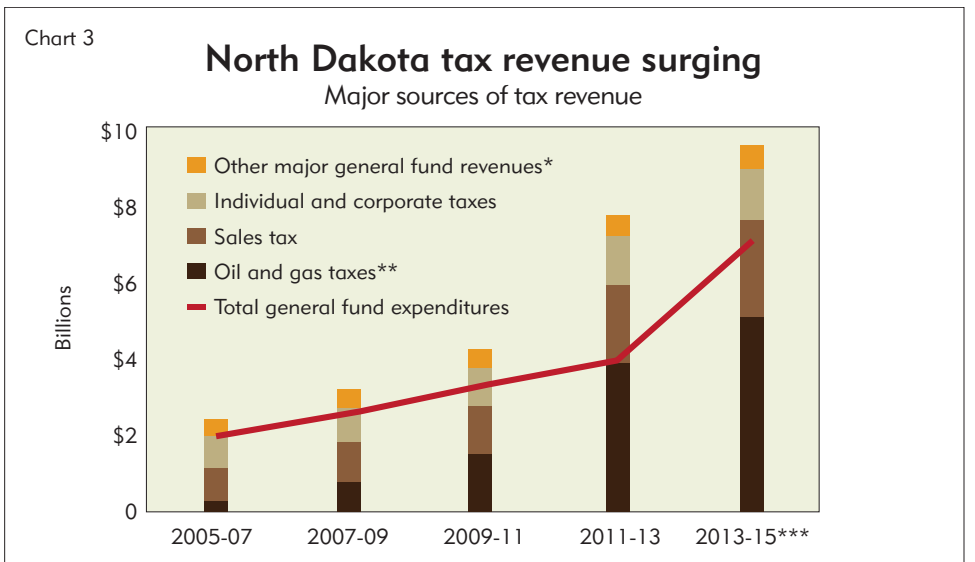
The good news is that North Dakota is brimming with money to address many of its needs.

The role of oil in this is both obvious and subtle. Oil and gas tax revenue has grown at a Himalayan trajectory and comes from an 11.5 percent severance tax (see sidebar on page 3 for explanation). As recently as the 2003-05 biennium, this tax tallied only about $120 million. It's projected to top $5 billion during the 2013–15 biennium (see Chart 3). This amount doesn't include royalty and other revenue from energy production on state-owned lands. In the recent biennium (through early March), this equaled $560 million.

Unbeknownst to many, however, very little of this oil and gas revenue goes directly to the state's general fund, the budget base for government operations. In fact, the general fund can directly receive no more than $300 million per biennium. The rest is distributed through a complex—some might say byzantine—system of allocations that somewhat limits the Legislature's annual decision-making over oil and gas revenues. Some of the money is automatically sent to city, county and tribal governments, while other funding goes to a host of priorities, including property tax relief, grant funding, rainy-day funds and long-term savings (see sidebar on page 6 for more discussion about oil and gas revenue allocations).

Other state tax receipts are also surging (see Chart 3). Sales taxes and income taxes on individuals and corporations, which make up the lion's share of the state general fund, have risen strongly in part from heavy direct and indirect spending that comes from oil development.

Chart 3



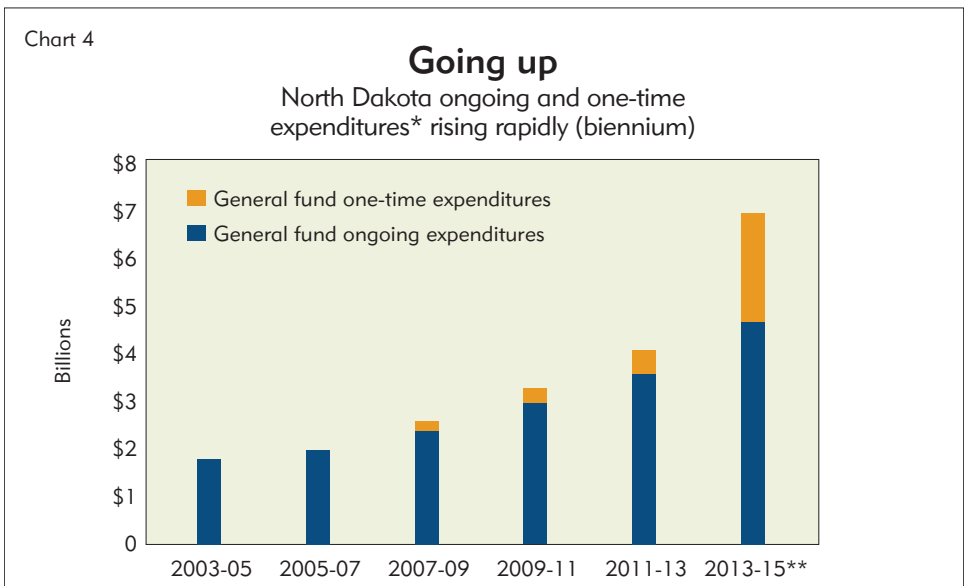
* Excludes contributions from oil and gas taxes

**6.5 percent extraction tax plus 5 percent production tax

*** Estimate

Sources: Oil and gas taxes from the Office of State Tax Commission; sales, income and other taxes from the North Dakota Legislative Council; general fund spending from the Legislative Council, with updated figures for 2011-13 and 2013-15 from the state Office of Management and Budget

Chart 4



* Does not include expenditures from federal revenue

** Estimate

Source: North Dakota Legislative Council, with updated figures for 2011-13 and 2013-15 from the state Office of Management and Budget

Add it all up, and a lot of tax money is flowing to Bismarck—a projected $9.5 billion for the 2013-15 biennium, triple the amount collected in 2007-09. Not surprisingly, general fund spending has swollen as well, to a record $6.9 billion for the coming biennium.

But the state has gotten in the laudable habit of squirreling money away in rainy-day and permanent trust funds (see sidebar on page 6). It also has been cautious in committing to permanent spending programs, preferring one-time expenditures—much of it to deal with oil impacts—that are not automatically assumed into future budgets. In the span of four budgets, the state has gone from zero one-time expenditures to $2.2 billion in the upcoming biennium, according to state sources (see Chart 4).

Say when

How much of that money is reaching the oil patch to expressly deal with oil impacts is hard to determine exactly. But the easy answer is "more."

In the spring, legislators passed a

Once oil and gas are produced—and thus taxed—there has already been considerable damage done to roads and pressure put on other infrastructure and public services. But the funding intended to mitigate those impacts has to wait for the next budget cycle. That means cities and counties are getting money for impacts that happened years earlier.

measure to spend more than $1.1 billion over the next two years for improvements to infrastructure, law enforcement and emergency services, with most of it going to the oil patch. Oil-impacted counties and cities will receive direct aid of $543 million—more than double the amount in the previous budget. The budget also includes $240 million for an oil-impact grant fund, almost double its previous allocation. The state's highway construction budget for the next two years was approved at $878 million, or almost $290 million more than the previous record in 2011, with most of the money earmarked for the oil patch. Overall state spending is also significantly higher, so increases for K-12 education and other fundamental public services will also flow to oil country, though to what degree is hard to track precisely.

Sources inside and outside the oil patch seemed universally pleased to see increased spending in the oil patch. Keith Lund, vice president of the Grand Forks Region Economic Development Corp., pointed out that oil revenue has helped to lower individual and corporate income tax rates statewide and provided property tax relief. The 2013-15 budget alone has $850 million in property tax relief. Corporate income tax rates have been lowered in each of the past four legislative sessions; top rates have gone from 7 percent in 2006 to 4.53 percent.

Maintaining that revenue stream requires ongoing investment, he added. "There are a lot of needs out in the western part of the state, and it has to be supported or it just all stops," Lund said.

But whether it's enough is a hotly debated question. Most sources in the oil patch were unequivocal that recent funding increases—while very helpful—were still insufficient. Many still see needs unmet from previous state budgets. In the legislative sessions of 2009 and 2011, "we thought we had done things to address the oil impact. But it turned out to be woefully inadequate," said Senate Minority Leader Mac Schneider (D-Grand Forks). "We weren't even playing catch-up." Even given the big increases in the newest state budget, "we're not under any delusions. This is not a cure-all [budget]," he said.

Oil patch advocates point out that direct aid to areas impacted by oil is still comparatively low despite the recent increases. In the early part of the decade, the percentage of oil and gas tax revenue sent back to producer counties averaged in the low teens. It increased to 17 percent in the 2011-13 budget and will increase to 21 percent in the coming two years, according to Pam Sharp, director of the state Office of Management and Budget. However, oil patch legislators like Rep. Bob Skarphol (R-Tioga) have pointed out that the state sends 35 percent of coal tax revenues back to producer counties. Sharp confirmed the estimate and said it might be conservative.

A report last year by Headwaters Economics of Bozeman, Mont., pointed out that North Dakota "stands out among its peers for providing the least direct funding for oil-impacted communities." Local governments in Colorado, for example, receive 63 percent directly; in Montana and Wyoming, 39 percent and 35 percent, respectively, according to the report. While direct aid is climbing and "fills an important gap," the report said, "leaving impact assistance to the discretion of state legislatures is not a responsible approach to managing an energy boom."

Because of its sovereign status, the Three Affiliated Tribes was receiving a slightly larger portion (20 percent) of tax revenue from production on the Fort Berthold Reservation than nonreservation counties and cities received over the same period. The state is renegotiating the compact, and revenue sharing is expected to reach a 50/50 split.

Could you send it yesterday?

The timing of funding has also become a major sticking point for oil patch communities.

Once oil and gas are produced—and thus taxed—there has already been considerable damage done to roads and pressure put on other infrastructure and public services. But the funding intended to mitigate those impacts has to wait for the next budget cycle. That means cities and counties are getting money for impacts that happened years earlier.

"The whole political process lags the impacts," said Bangsund, from NDSU, and delay is compounded by the fact that the Legislature meets every other year. "The response on immediate needs has not kept pace. There is a lot of entrenchment and inertia to get past. … More needs to be done on a continual basis," said Bangsund.

Shawn Kessel, Dickinson city administrator, was giving testimony at the Capitol during the spring session, and "one legislator, who shall remain nameless, came up to me afterward and said, 'Shawn, I get it. Thank you. The light has gone on. You guys are making decisions today that are affecting you [financially] now. But you're getting resources tomorrow.'"

Some governments are taking steps to help control development or at least prepare financially for it. Dickinson and many other cities have instituted impact fees on new housing developments to help with road and other associated infrastructure needs. Williston recently instituted a one-cent general sales tax to

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Dickinson:
Watching and learning

At the local level, one city that appears to be coping comparatively well is Dickinson. The city gets occasional visitors from local government officials in Texas, where small cities there are undergoing similar challenges thanks to a shale oil boom in the Eagle Ford Formation of southern Texas. If Dickinson is doing well, part of the reason is because the city is located on the fringe of the Bakken Formation and has not seen the level of oil drilling and related activity experienced in places like Williston. "So we got the benefit of watching and learning," said Shawn Kessel, Dickinson city administrator.

But as a regional hub, it has had to deal with a flood of new people. The city was founded in 1881, and in 2010 the U.S. Census pegged the city's population at about 18,000. By 2012, the population had jumped 50 percent to 26,700. By 2020, NDSU research suggests it could exceed 40,000.

Oil activity "affects every single service we provide as a city," Kessel said, and it's the same story for school districts and Stark County. Kessel said human capital is the biggest challenge for local governments because the impact of a rising population "doesn't hit you all at once. It comes at you in waves, and human capital has to reflect that wave." First comes planning, and then the building department where permitting takes place. Then once more housing is built services like fire and police require more staffing.

In the last few years, the city has added 29 employees, and wages have increased by 10 percent each of the last two years. Before the boom hit, Dickinson was planning a $12 million expansion of its wastewater treatment facilites. After getting the population estimate, "we bit the bullet" and upped the ante on a $48 million expansion.

State aid to regional hubs has increased, but aid formulas are based on old population estimates, and "we're making so many decisions based on how many people will be here in 2020." The city is in line to get nice bump in aid and other grants from the state, to about $33 million. Kessel appreciates that, but added, "we're still woefully underfunded even in this biennium."

Fiscal oil boom from page 5

pay for a gigantic new recreation center and other planned improvements. But similar tax mechanisms are not easily available for many public services, like schools and law enforcement, and many small communities lack the staffing to implement and enforce impact fees.

Long term: Straight ahead or wrong turn?

In the rush of oil development and subsequent government reaction, many also believe that oil-impacted communities and the state have their heads too low to the ground, too obsessed with today's needs to worry about long-term economic development and diversification.

Gardner, from Bootstrap Solutions, has done research showing the crowding out that can happen from oil activity, and it's a story that resonates in the Bakken. Exploration, drilling and production bring many jobs. Labor shortages ensue, driving up wages. As workers migrate to well-paying jobs, housing becomes scarce, and the overall price of living goes up.

Meanwhile, base industries like agriculture and manufacturing are weakened as land and labor become more expensive and more pressure is put on water and road infrastructure. High costs and lack of affordable housing also stifle the development of secondary, non-oil-related professional and service industries that would normally emerge to serve a growing population with considerable discretionary income.

"In the short term, that has the effect of crowding out the lower-wage end" of the economy, not only retail but other service jobs not normally considered lower wage, like teachers and police officers, said Gardner. "The perverse result is an energy county can end up less diverse at the end than a non-oil county," he said.

The phenomenon even has a name, "Dutch disease," coined for the economic mania that followed the discovery of major oil and gas deposits in the North Sea near the Netherlands in the 1960s.

Bangsund, from NDSU, said the challenge for the state is figuring out how to avoid "lopsiding the economy" by ensuring that agriculture remains profitable in the region and that Dickinson retains the manufacturing base it had before the boom while facing strong wage pressures from higher-paying oil jobs. "The state is still far too reactive. … It's easy for the state to take its eye off that goal. … We're so enamored with current activity that we're not having that [long-term] discussion."

Sen. Schneider agreed that the state would benefit from some long-term planning and fretted that the state is

Continued on page 8

Oil tax spending:
"Pots for this and pots for that"

Over the past several state budgets, North Dakota lawmakers have created a quirky, idiosyncratic system for allocating the gusher of oil and gas tax revenue coming into state coffers. As this revenue has grown, so have the number of recipients, the amount of money received and the overall complexity of the allocation system.

Among numerous sources, nary a person said they fully understood the state's allocation system for oil and gas taxes.

"It's very complicated. I don't think the average North Dakotan could tell you what they have in all those funds. I couldn't tell you, and I follow this stuff," said Barry Wilfahrt, president and CEO of the Grand Forks/East Grand Forks Chamber of Commerce.

Senate Minority Leader Mac Schneider (D-Grand Forks) acknowledged, "You almost need an astrophysics degree from MIT" to understand the many different recipients of money and how amounts are determined.

Those living in oil country are of the same opinion. Shawn Kessel, Dickinson city administrator, said the distribution mechanism "fills buckets after buckets after buckets. It's hard for me to keep track."

"There are pots for this and pots for that," said Deb Nelson, head of Vision West ND, a Dickinson-based consortium

Source: North Dakota Legislative Council

of oil-impacted local governments and other organizations. "To the layperson, it's a monstrosity."

In previous years, that might not have mattered so much. A decade ago, severance taxes on oil and gas production contributed about $120 million to the state budget. But in the just-completed 2011-13 biennium, they tallied $3.8 billion, which doesn't include $560 million earned (as of March) in royalty fees and lease-bonus payments for oil activity on state-owned land.

The state spreads that largesse among a dozen general recipients (see graphic). That's the simple part. The complex part has to do with the statutes and formulas that generate the amounts that go in each pot. For example, the state charges a separate 5 percent production tax and 6.5 percent extraction tax, and revenue from each tax fund's different buckets, but there's also some crossover.

The pots also have different fiscal goals. Some are intended to fund the regular business of government. Of the $3.8 billion in 2011-13, $300 million went to the state's general fund and $410 million was sent directly to counties, cities and tribes to help them deal with infrastructure and other impacts of oil and gas activity.

Then there are special-use buckets for the majority of the oil and gas revenue. Funds in some buckets are designed to be spent immediately—for property tax relief and grant money for oil-impacted communities, for example. The Strategic Investment and Improvement Fund is considered a rainy-day fund, but has few restrictions and has been tapped for a growing amount of one-time expenditures deemed necessary by lawmakers. "It's all fungible. It's really a soft barrier between the general fund and some of these [special] funds," according to Schneider. Other rainy-day buckets, like the Budget Stabilization Fund, come with some spending restrictions.

Finally, there are permanent trust funds, which have firmer lids on expenditures. The Common School Trust has $2.4 billion in assets, and distributions are channeled solely to K-12 school districts based on the trust's average assets. Over the coming two years, the fund will give $130 million to local school districts, double the amount in 2007-08.

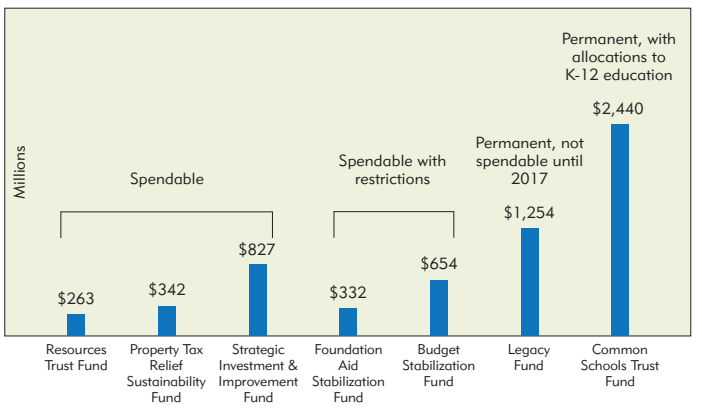
The most significant new recipient of energy tax revenue is the Legacy Fund. Created two years ago, it already has $1.2 billion in assets, with roughly $80 million being added every month—assets that are off limits for spending until at least 2017. (Oil and gas trust funds will be the focus of additional *fedgazette* research for its October issue.)

A handful of buckets are amassing considerable balances, estimated at a total $6.1 billion at or near the end of fiscal year 2013 (see chart). While some of this balance will fund a record $2.2 billion in one-time expenditures in the 2013-15 biennium, most of the pots will continue to see revenue infusions from growing oil and gas tax receipts. The Legacy Fund alone is projected to reach $3 billion by the end of fiscal year 2015.

—Ronald A. Wirtz

North Dakota special-use and savings accounts

Estimated FY2013 ending balance of special-use funds receiving oil & gas revenue* (millions of dollars)



* Including production and extraction taxes, royalties and lease bonus payments

Source: North Dakota Legislative Council; Common School Trust Fund figure from state Department of Trust Lands official

Fiscal oil boom from page 6

not doing enough to "plan for life after oil. There was none of that" during the most recent session. He pointed to recent nonpartisan reports about the state's future (North Dakota 2.0 and North Dakota 2020 & Beyond) that offer numerous recommendations about what the state can and should be doing. "We suffer from a lack of action, not from lack of a plan," Schneider said.

That's not to say the state has done nothing. It has a series of permanent and special-use funds that, at the very least, set aside a growing pot of money for future needs, however defined by future legislative sessions (see sidebar on page 6). One of the most far-reaching is the Legacy Fund, a permanent fund set up two years ago that has about $1.2 billion and was adding $80 million a month. This money cannot be spent until at least 2017, and any efforts to spend its assets must be approved by a two-thirds majority in both houses. (A separate *fedgazette* article is forthcoming on permanent oil trusts in other U.S. states, Alberta and Norway.)

Ultimately, assessing local and state progress in catching up with oil development is a big challenge because the state is undergoing an economic transition like none it has ever seen, one that is dynamic and hard to analyze. Almost unbelievably, the state is still on the leading edge of this boom. Oil production is projected to grow for the next 10 to 12 years—possibly doubling, maybe more—before settling into a slow, sustained downward slope. At least for a while, that means more of everything, good and bad.

Sources across the state repeatedly said clear progress has been made at the local level and (some admit grudgingly) at the Legislature. Many sources pointed to the state's conservative nature, which often prevents sweeping moves in favor of more incremental ones. In due time, they said, more progress will be made. Whether it's occurring at the speed and in the direction necessary to tap the full potential will be gauged in years and in the remainder of the oil and gas still to be pulled from the ground.

Wayne Biberdorf is the state's energy impact coordinator, appointed by Gov. Jack Dalrymple in March of last year to improve coordination between western North Dakota communities and state agencies. "I keep the governor's office updated with respect to the needs of local political entities," he said.

In Biberdorf's opinion, "Everybody's picked up their game. There's no doubt in my mind." Places like Williston and Watford City have witnessed unprecedented economic activity, "and the scale at which they are ramping up [to meet that demand] is amazing." f

Fine-tuning the oil tax machine

Taxes on oil and gas vary widely among states, with North Dakota mostly in the middle of the pipeline

By RONALD A. WIRTZ
Editor

Taxes can be simple mechanisms. Their application in the hands of lawmakers is often anything but.

Oil and gas tax revenue is a function of both energy production and tax structure. While states can't control the former, they have total control over the latter.

No two states take the same approach to taxing oil and gas production. They vary on what, how and how much to tax—even when to tax. And once that's all done, they differ on how much to give back in exemptions, credits and incentives designed to encourage exploration and production. As a result, tax revenue among energy-producing states varies widely.

Have oil, will tax

The first requirement for taxing oil and gas is, of course, oil and gas. Only 31 states produced oil last year, and 33 states marketed natural gas. Many East Coast and Midwestern states (like Minnesota and Wisconsin) have little or no oil or gas production.

Oil production is flat or declining in most states; it's growing significantly only in North Dakota and Texas (see Chart 1), but is rising modestly in a few states like New Mexico and Oklahoma. Still, given today's prices, even falling production can represent significant tax revenue.

Some states have seen natural gas production explode in recent years—like Pennsylvania, whose daily production rose almost 10-fold from 2010 to 2012, to more than 6 billion cubic feet per day, second only to Texas. While gas revenues are not trivial, in most states they do not match those of oil because taxes are usually based on the value of production, and natural gas prices have been low since 2009.

Once there is production, the most obvious component of state tax policy is so-called severance taxes that are levied at the wellhead on the gross production or market value of energy extracted (or severed) from the ground. These rates tend to vary considerably among states.

Headwaters Economics, a consulting firm in Bozeman, Mont., has studied the matter, "and we expected to find that states were quite similar … and that they equalized to their peers," said Mark Haggerty, an economist with Headwaters. Instead, rates turned out to be quite different.

North Dakota's severance tax rate is 11.5 percent (see description sidebar on page 3). That's both high and low, depending on the comparison (see table). California levies no severance tax (technically, it levies a 10th of 1 percent tax to pay for related government agency work). Texas, the nation's largest oil producer by a wide margin, levies a 4.6 percent severance tax.

On the other end of the scale is Alaska, which this spring passed a new 35 percent severance tax rate, with a $5 per barrel tax credit. This new rate replaces a progressive tax formula that started at 25 percent but increased progressively with oil prices, nearing 50 percent when oil prices hit $100 per barrel.

Haggerty noted that states with higher tax rates have often had high rates from the start, which he said was "lucky" because states struggle to increase tax rates after the fact. Pennsylvania, for example, has unsuccessfully attempted to create a severance tax to capture revenue from surging natural gas production there. In California, a top oil-producing state for decades, opponents have defeated several recent efforts to implement a severance tax.

Oil severance tax rates

California	0%
New Mexico	3.75%
Texas	4.6%
Colorado	5%
Wyoming	6%
Oklahoma	7%
Kansas	8%*
Montana	9% to 14.8%**
North Dakota	11.5%
Louisiana	12.5%
Alaska	35%***

* Kansas' rate does not reflect 3.67 percent property tax credit.

** Montana's rate depends on working/nonworking well interest.

*** Alaska's rate does not factor for $5/barrel tax credit, as well as revenue exclusions that can reduce the base rate to as low as 14 percent.

Source: State energy and other agencies

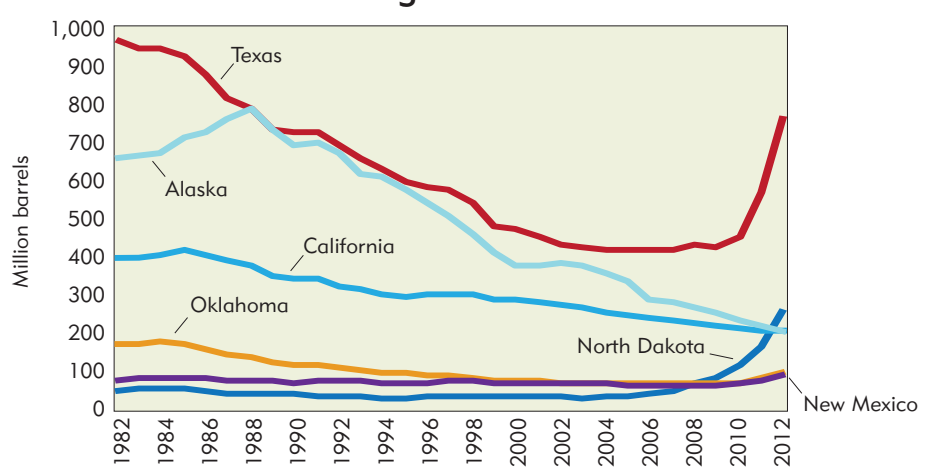
Royalties fit for a king

States collect oil and gas revenue from a variety of other sources, including energy production on state-owned lands. States sell the rights to extract oil and gas on publicly owned land to private producers, receiving one-time lease-bonus payments. Once production starts, states receive royalty payments (usually to special land trusts) for every barrel of oil produced and at rates comparable to those received by private landowners.

In North Dakota, royalty rates range from 12.5 percent in marginal-producing counties up to 18.75 percent in the seven largest oil-producing counties; the

Chart 1

Annual oil production among leading U.S. states



Source: Energy Information Administration

latter rate was increased in 2012 to reflect the fact that royalty rates on private land were widely known to be higher. In fiscal year 2012, the state earned nearly $320 million in royalties and lease-bonus payments.

State royalty rates elsewhere tend to run between 12 percent and 19 percent, but revenue streams can vary tremendously based on the amount of oil production that takes place on public land. Alaska's comparatively modest royalty rate of 12.5 percent brought in $3 billion in 2012, easily the most of any U.S. state because virtually all oil production occurs on public land.

Many states also levy so-called ad valorem taxes on property and production equipment used for energy production. North Dakota is one of the few major producing states that do not. Wyoming makes up for a comparatively low severance tax (6 percent) with a 6.7 percent property tax.

Complicating the math of taxes is a laundry list of industry exemptions, tax credits and other incentives in each state, most of which apply to severance taxes. In Texas, for example, certain tax incentives can reduce severance tax rates to between 2.3 percent and zero. In Alaska, significant revenue exclusions can take the severance tax rate as low as 14 percent, according to one analysis done for the state.

Most states have exemptions for stripper (or low-producing) wells, most of which are late in their production life cycle. In Louisiana, wells producing less than 10 barrels a day are taxed at about one quarter the normal rate. In Wyoming, the normal 6 percent severance tax drops to 4 percent for stripper wells. North Dakota had steep tax discounts for stripper wells until this spring when the Legislature voted to eliminate the exemption, a move the state expects will yield an additional $50 million in annual tax revenue.

Apples-to-oil comparisons

Given these many moving parts, uncovering the impact of state tax policy on effective tax rates and revenues is difficult. Two studies, however, offer a glimpse.

Headwaters analyzed the tax ramifications of an average Bakken formation well in four states (including hypothetical wells in Colorado and Wyoming, which lie outside the Bakken). During the first three years (when production is at its highest), this well would generate about $15.4 million in gross market value given recent oil prices.

But over this three-year period, the four states took in different amounts of revenue depending on tax rates, exemptions and credits. Montana would receive less than half the revenue of North Dakota (see Chart 2), mostly because the state has an exemption that lowers severance taxes to less than 1 percent for the first 18 months of production.

"I was surprised there were not more studies [on effective tax rates]. Getting an apple-to-apple comparison is really tough" given the many different tax laws, assessment practices, credits and exemptions that each state has approved over decades.

—Rod Backman
Covenant Consulting Group

Last December, Rod Backman of the Covenant Consulting Group, located in Bismarck, N.D., looked at effective tax rates (total taxes paid, including credits and exemptions, divided by the value of oil and gas produced) at the behest of the North Dakota Department of Commerce. The study sample included some of the largest state producers as well as some (like Montana) in reasonable proximity to North Dakota.

"I was surprised there were not more studies," said Backman. But after digging into the matter, he also found that "getting an apple-to-apple comparison is really tough" given the many different tax laws, assessment practices, credits and exemptions that each state has approved over decades. Even finding state bureaucrats who could help with the accounting was difficult, he said, because state personnel were often familiar with only one tax area, like severance or property taxes, or oil taxes and not gas taxes.

Backman's study divided the sum of severance and ad valorem taxes (including credits and exemptions) by the average market value of energy production to arrive at an overall effective rate for each state. It showed a wide divergence—with California and Alaska as bookends—along with some relative grouping among other states (see Chart 3; these rates do not include state royalty income and lease-bonus payments).

The difference in rates can amount to billions of dollars annually. Alaska produces about 4 percent more oil in a year than California and about one quarter less than North Dakota. Yet Alaska collected $6.2 billion in severance and property taxes in fiscal year 2012—about three times that of North Dakota and roughly 15 times the tax revenue collected in California. And those figures don't include Alaska's 2012 oil royalties of $3 billion.

That might seem counterintuitive; all things equal, higher taxes should discourage exploration and production. Then again, the supply of extractable oil is finite and geographically bound, and producers will stay active in areas where profits can be reaped, even in the face of high tax rates, as evidenced by Alaska's historic status as one of the top producing states.

That's not to say tax rates don't matter. For one, they can affect where companies choose to explore for more oil. Oil well output starts to fall after just a few years, and without more drilling, a state's production falls as wells age. In Alaska, production since 1990 has fallen faster than in any other state and was a major legislative rationale for lowering tax rates this spring in hopes of jumpstarting more exploratory drilling. This justification also applies to states that offer credits or tax exemptions during early production.

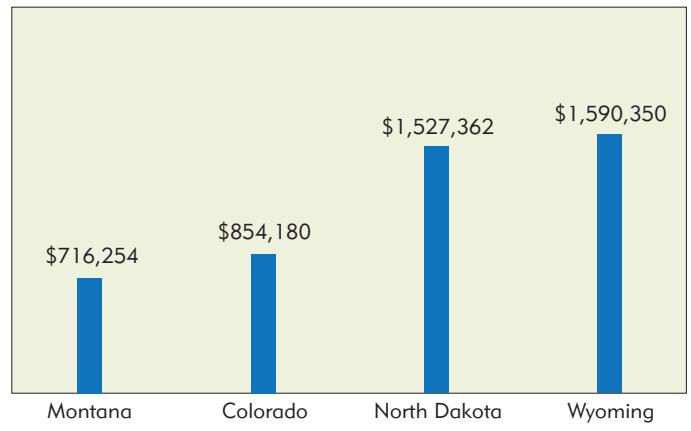
Tax considerations for individual firms also depend on the phase of production. Ron Ness, president of the North Dakota Petroleum Council, said tax rates matter less in the drilling phase because leasing activity will concentrate where the resource looks most promising, and wells have to be completed to preserve lease agreements. But once wells are completed, energy companies evaluate their portfolio of leases to see where capital will be most productive.

"If your return is better in the Eagle Ford [shale formation in Texas] or elsewhere, resources will be diverted," Ness said. "It's no different than any other business—capital chases the best return. With growing shale resource plays, companies are continuously evaluating their options." f

Chart 2

Incentives = big effect on early tax revenue

Cumulative tax revenue for first three years of production from average unconventional (Bakken-like) oil well

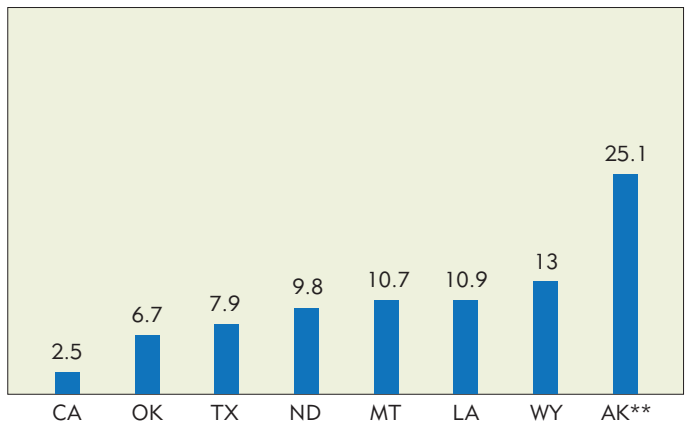


Source: Headwaters Economics

Chart 3

Wide tax disparities

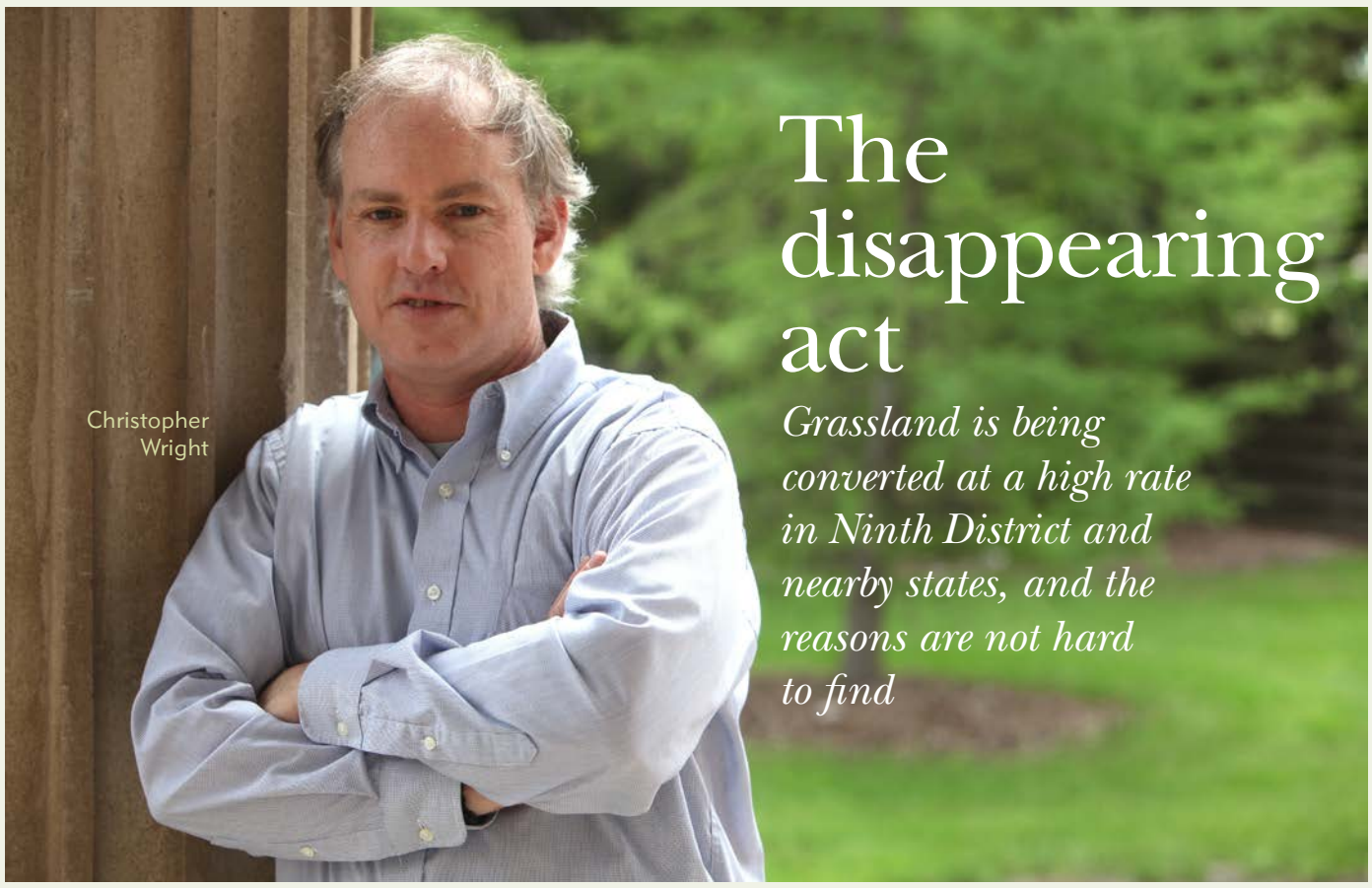
Effective tax rates for oil and gas production*



* Includes severance/production and ad valorem taxes, and is based on FY2010 taxes, credits, exemptions, oil production and pricing.

**Alaska changed its tax structure in April. The value above reflects analysis completed before this change. Updated effective tax rates are projected to be lower going forward.

Source: Covenant Consulting Group, December 2012



PHOTOGRAPH BY JAY PICKTHORN

The disappearing act

Grassland is being converted at a high rate in Ninth District and nearby states, and the reasons are not hard to find

Anyone with a keen eye on regional topography has noticed that more land has gone into crop production in recent years. The number of acres enrolled in the Conservation Reserve Program (CRP) has been steadily declining, and each year it seems like corn acreage sets a new record. This year, the U.S. Department of Agriculture forecast the highest number of corn acres since 1936, a time when yields per acre were quite a bit lower.

But just how much land is being switched to crops, and where? To get the details, geographers Christopher Wright and Michael Wimberley of South Dakota State University, Brookings, dug into new high-resolution satellite imagery from the USDA that classifies land by its use. The data were available beginning in 2006, so they were able to compare that year with 2011 and by coincidence capture the change in land use over a period of rapidly rising crop prices, focusing on the western Corn Belt, a region that includes Minnesota, the Dakotas, Kansas and Iowa.

What they found was a remarkable reduction in the amount of grassland in this region—both native prairie and pastureland—and a concomitant increase in corn and soybean acres. Their research appeared in the prestigious Proceedings of the National Academy of Sciences.

Wright is a postdoctoral fellow at SDSU's Geographic Information Science Center of Excellence. He studies the interaction of landscapes with their broader ecosystems, particularly wetlands and grasslands, both in natural areas like Yellowstone National Park and in those heavily altered by humans like the Great Plains. Wright has a B.A. in biology from Williams College and earned his M.S. in agronomy and Ph.D. in biological sciences from Montana State University.

The fedgazette *sat down with Wright to discuss these findings and what they mean for agriculture, the environment and policy.*

fedgazette: Where do you see the heaviest concentration of conversion?

Wright: Out on the periphery of high-producing farmland. The Corn Belt is expanding north and west into the Dakotas and then south into the southern parts of Iowa that aren't as suitable for corn production. Basically, what we found was that the grassland conversion was occurring in sort of a bathtub ring around the core corn and soybean region in southwestern Minnesota and northern Iowa.

fedgazette: Can you give us a sense of the scale of this land-use shift?

Wright: Well, the net change in that five-state region is about 1.3 million acres of grassland lost. But that's net, so there's almost 2 million going from grassland to corn and soy, but conversely there's 660 million going from corn and soy to grassland.

fedgazette: Is some of the land converted from crops to grassland due to normal crop rotation?

Wright: Yes. Historically, there's been a fair amount of conversion from pastures and hay into corn and soybeans. In the historical data, that tended to balance out; there's a loss, but then the gains would offset it. Now there appears to be a shift toward a net loss of grassland.

fedgazette: You argue in the study that this net shift away from grassland is a persistent shift, not just due to crop rotation.

Wright: In Iowa, there are basically negative grassland trends covering the entire state, even though there isn't a lot of grassland in most of Iowa. So there's a general loss of grassland in Iowa, but where the grass is going to corn and soybeans is concentrated in southern Iowa.

fedgazette: So if it was just standard land-use conversion due to crop rotation, you wouldn't be seeing it concentrated in any one particular area.

Wright: Yes, exactly. Then in North Dakota, you see lots of grassland concentrated in the Red River Valley and eastern North Dakota [in 2006] and then corn and soybean increases in those same areas [by 2011]. These two states are really representative of the two trends—one occurring out on the periphery of corn and soybean country, and the other occurring in the core region of corn and soybean farmland.

fedgazette: For the grassland being converted, is it the same kind of land everywhere? Is it all marginal land on the periphery of more fertile land?

Wright: Well, that was something that was really interesting, and it varies quite a bit from state to state. In Minnesota, we found that most of the conversion was occurring on lands that have poor soils and are subject to wetness, from either flooding or a high water table. So conversion in these areas suggests that there's been an increase in drainage in Minnesota. In the Dakotas, you see more conversion occurring on erodible lands and areas where the climate is less suitable. In South Dakota, you're moving westward into areas where there's typically not enough precipitation for those crops. Then in North Dakota, the expansion is northward into shorter growing seasons.

Another thing we noticed in the Dakotas was that the conversion was concentrated on class 2 lands [a crop capability classification by the USDA], which are relatively good lands. So that suggested to us that there were combined livestock/crop operations probably shifting toward more crop production and less livestock.

fedgazette: So it's fairly high-quality land that had been used for pasture.

Wright: Exactly. And there are a number of econometric models that suggest that kind of shift would occur at higher crop prices. In Iowa, the conversions are concentrated on class 3 land, which is relatively poorer land compared to what you see in the Dakotas. The idea is that that's basically all that's left for corn in Iowa.

fedgazette: Because in Iowa, corn production is already so intensive that it can be expanded only to lower-quality land.

Wright: Right. And then in Nebraska, we see a conversion out to even poorer lands, which definitely suggests more irrigation in Nebraska.

fedgazette: The period you're looking at is fairly recent. Because the data we have now are better, is it possible to put this into historical context? Is this conversion unprecedented?

Wright: Well, there's not a lot of data to make those comparisons, but there was one paper that had done a decade-by-decade analysis of grassland conversion,

and it was interesting that the rates we saw hadn't been observed since the '20s and '30s, which was when widespread mechanization occurred in the Great Plains.

fedgazette: You mentioned that in the paper. You also say in the paper that this land use conversion is comparable to the rate of deforestation in Brazil, Malaysia and Indonesia in the 1980s and 1990s. That sounds pretty alarming. Is that a fair comparison?

Wright: Yeah, that might be overly dramatic. They are comparable, but the rates we see in the Corn Belt are relatively localized. So you may have a high relative rate over a very small area; whereas, in the rain forest you would have high rates over a relatively large area.

fedgazette: And what is that conversion rate in the Corn Belt?

Wright: We find these localized rates between 1 percent and 5 percent annualized. So a 5 percent rate is pretty fast. But when you look at the rates by state, they range between a half percent and almost 1.5 percent.

fedgazette: If the shift in land use has been accelerating, what do you think are the underlying factors? Is it all just crop prices?

Wright: Crop prices are the primary driver. We don't have the ability to differentiate between biofuel demand and other reasons for higher prices. But, obviously, I think the main driver is high prices—and then insurance.

fedgazette: I want to ask what role insurance plays. Can you explain why crop insurance might make it more attractive to put grassland into crop production?

Wright: I think the evidence is that it's occurring on marginal lands, and insurance mitigates their downside risk. The issue of drought might be the main risk for these farmers, and with insurance you're not taking such a risk—not just from climate, but from soil. These conversions are occurring on poor soil that would be more prone to drought risk as well. Those soils are shallow typically and gravelly and have low water-holding capacities.

fedgazette: The comparison to deforestation and the rain forest raises some obvious questions about the environmental impact of this kind of conversion. This is an economically sensible decision for farmers to make, looking at the costs and benefits of putting another acre into production. But what are the bigger-picture costs that might be associated with such a major shift in land use?

Wright: Especially in North Dakota and South Dakota, we're in the prairie pothole region, which produces half the ducks in North America. And so grassland conversion in the vicinity of wetlands can have a dramatic effect on duck reproduction. They need that grassland as cover from predators. Hunting is a big economic concern in our region.

And then there are other externalities of sedimentation of wetlands from soil erosion on nearby land that is being actively farmed. There are also issues of nitrogen input into the Mississippi River and the dead zone in the Gulf of Mexico, and carbon balance and sequestration associated with the conversion process.

fedgazette: Is the idea that from a carbon standpoint, an acre of grassland and an acre of cropland put out different amounts of carbon and can sequester different amounts of carbon?

Wright: Grasslands have built up soil carbon, and when you till them to convert them to cropping, you release carbon dioxide from the land during that process. Then you have a lower sequestration capability in cropland relative to grassland. People have done life-cycle analyses looking at the net carbon benefits associated with biofuels for use in petroleum. Corn ethanol has a net [carbon] benefit, but with the carbon release that occurs during the conversion process, you end up spending a couple of decades of making ethanol to overcome that carbon debt.

fedgazette: You mention in the paper that your methods might actually help assess the impact of biofuel policy in terms of climate change and other issues. How might that work?

Wright: With the ability to actually identify the amounts and rates of land-cover change, you could use published values of carbon sequestration and differences between land-cover types to make projections. A lot of the carbon impact studies of biofuels in the Corn Belt have been based on projections that all the CRP land gets converted to crops. We found that's not always the case that all the CRP land gets converted; instead, some of the CRP land and then a lot of the pasturelands get converted. That would give you a more realistic picture of what's going on, and that gives you better estimates of the impacts.

fedgazette: You also make an argument that greater production of cellulosic ethanol might actually help mitigate this phenomenon of grassland conversion. How would that work?

Wright: The idea there is that you wouldn't accrue the carbon debt associated with conversion because you're not tilling the soil to convert it to a different type of grass that could be a perennial feedstock for ethanol. Say you could take a pasture and instead of grazing cattle on it, you could seed crops like switchgrass into it, harvest that biomass and then use that as your feedstock. I think that's the hope.

But the adaptation of that technology has been slow. Crop prices are so high right now that one of the points we wanted to make in the paper is the rapid rate of change that's occurring under this current biofuel strategy. If we don't get out ahead of it, we're going to lose that opportunity to try a different strategy. And even if you took that converted land and put it back into perennial feedstock, you'd still have that carbon debt from the original conversion to corn or soybeans.

fedgazette: Moving to the issue of erosion, another comparison you made a moment ago was that we're seeing probably the highest rate of grassland conversion since the '20s and '30s when agriculture became mechanized. Historically, we know that was the era that preceded the Dust Bowl. Is there a potentially higher risk now of a catastrophic erosion episode?

Wright: That was funny—that got picked up in a number of media outlets. We didn't even make that connection. We probably should have. We didn't really mean to suggest that there was a Dust Bowl on the horizon. I don't think there's a chance of another Dust Bowl to speak of. Our cropping practices are so different now in the sense that most farmers are doing no till or limited tillage. So I don't think you would get wind erosion like you did during the Dust Bowl.

fedgazette: That's comforting.

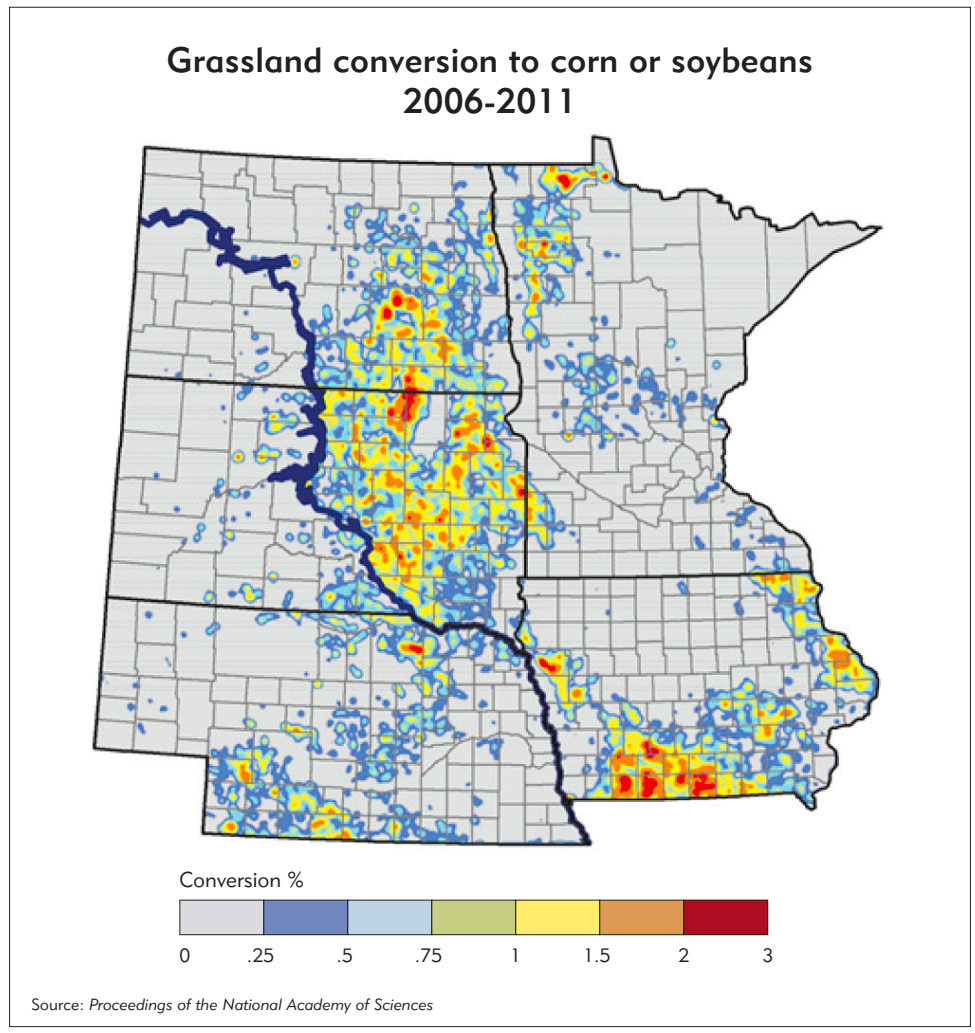
I know you probably don't think of yourself as a policy wonk, but given what we know about how the policy environment may have encouraged this shift and some of the potential costs associated with it, what are some policy options that might slow the rate of conversion?

Wright: I think increasing CRP payments would be appropriate. It seems like support for CRP is on the wane. I think we have to compensate farmers for the ecosystem services that these grasslands provide. And then there have been proposals to limit crop insurance in the period immediately following grassland conversion. I think they were talking about a five-year window where you wouldn't be eligible for crop insurance. That would be a way to discourage people from converting land.

And I guess another one would be if we had a better carbon market. That might be a way for farmers to get compensated for sequestering carbon. I think basically the bottom line is you've got to make it more profitable to keep land in grass than it is to put land into corn. That's really the main issue.

fedgazette: Thank you.

—Joe Mahon



Source: *Proceedings of the National Academy of Sciences*

Minnesota

Five largest manufactured export destinations

	Total Exports 2012 (millions of dollars)	Annual Percent Change 2011-2012
Canada	5,112.5	1.6
Europe	4,192.1	2.1
Asian NIEs*	2,074.3	1.4
China	1,564.2	-9.9
Southeast Asia	1,274.2	-13.6
Total Manufactured Exports	18,616.5	1.2

Five largest manufactured export industries

	Total Exports 2012 (millions of dollars)	Annual Percent Change 2011-2012
Computer and Electronic Products	3,973.9	2.6
Machinery, Except Electrical	3,389.0	-1.5
Transportation Equipment	2,295.2	2.4
Misc. Manufactured Commodities	1,710.7	11.4
Food and Kindred Products	1,644.0	4.4
Total Manufactured Exports	18,616.5	1.2

Montana

Five largest manufactured export destinations

	Total Exports 2012 (millions of dollars)	Annual Percent Change 2011-2012
Canada	547.4	8.3
Europe	189.7	1.5
Asian NIEs*	130.5	-29.7
China	80.9	-26.3
Southeast Asia	47.8	20.6
Total Manufactured Exports	1,132.5	-3.0

Five largest manufactured export industries

	Total Exports 2012 (millions of dollars)	Annual Percent Change 2011-2012
Chemicals	326.5	-6.6
Machinery, Except Electrical	219.3	5.4
Petroleum and Coal Products	149.0	-7.0
Transportation Equipment	104.7	-30.2
Nonmetallic Mineral Products	72.7	24.4
Total Manufactured Exports	1,132.5	-3.0

North Dakota

Five largest manufactured export destinations

	Total Exports 2012 (millions of dollars)	Annual Percent Change 2011-2012
Canada	1,673.7	35.2
Europe	227.7	-19.8
Mexico	184.5	93.6
Pacific Islands	129.9	51.7
Former Soviet Republics	89.6	17.9
Total Manufactured Exports	2,551.6	25.7

* Asian NIEs (newly industrialized economies) include Hong Kong, Singapore, South Korea and Taiwan.

District manufactured exports grew moderately in 2012

By ROB GRUNEWALD
Economist

BIJIE REN
Research Assistant

Ninth District manufactured exports offered both some good news and some less-good news in 2012.

Exports across Ninth District states grew 4.5 percent during 2012, reaching a record $45.7 billion. But that positive growth rate was lower than the national average of 5.5 percent, and for the second year in a row, the annual growth rate dropped from the previous year. Manufactured exports grew over 10 percent in 2011 and 17 percent in 2010.

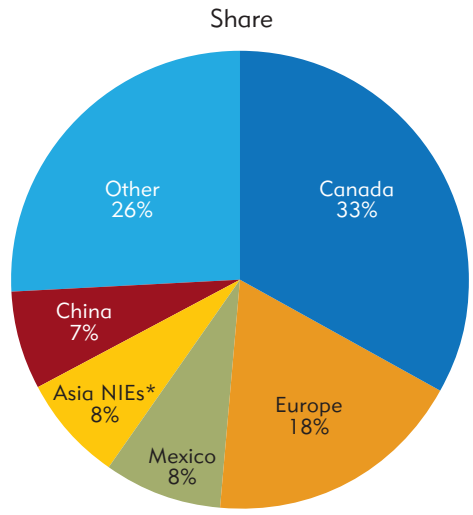
While district exports to Canada and Mexico remained strong, exports decreased to Europe and China, where economic activity slowed during 2012. Among district states, North Dakota posted the strongest increase at 26 percent, followed by South Dakota at 7 percent.

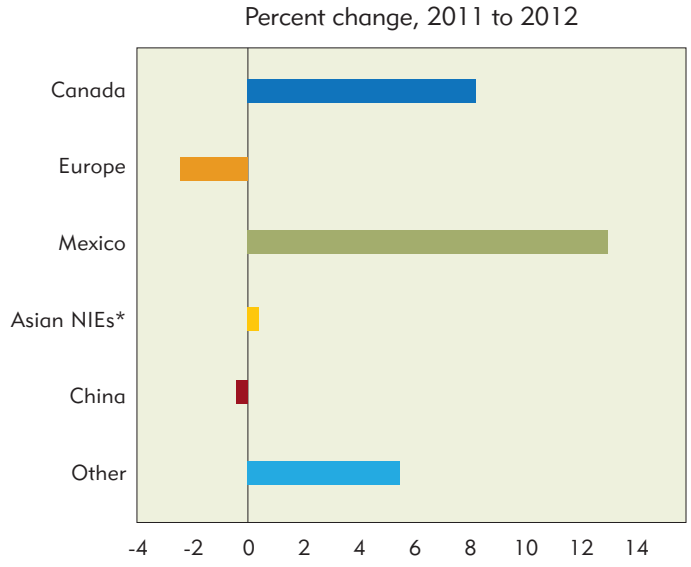
Neighboring countries: solid growth

Manufactured exports to Mexico and Canada showed solid gains of 13 percent and 8 percent, respectively. Canada is the district's largest trading partner, receiving one-third of the district's manufactured exports in 2012, while 8 percent were sent to Mexico (see Chart 1). The economies of Canada and Mexico grew moderately during the year, which helped boost demand for district exports (see Chart 2). Furthermore, the U.S. dollar depreciated against the Canadian dollar and Mexico's peso during 2012, which made district exports less expensive in these countries. The district's top export to Canada is machinery, while food and kindred products top exports to Mexico.

Chart 1

Five largest district manufactured export destinations



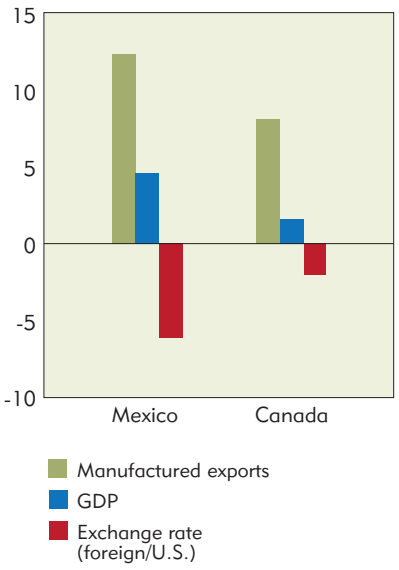


* Asian NIEs (newly industrialized economies) include Hong Kong, Singapore, South Korea and Taiwan.
Source: WISERTrade International Trade Database

Chart 2

Economic growth and depreciating dollar boost export gains to Mexico and Canada

Percent change, 2011 to 2012



Source: WISERTrade International Trade Database, Haver Analytics

Meanwhile, slower economic growth contributed to decreases in district manufactured exports to Europe (-2.4 percent) and China (-0.4 percent). During 2012, Europe's gross domestic product decreased slightly, while China's GDP growth slipped from over 9 percent in 2011 to below 8 percent in 2012. Even though China posted positive growth, the decrease in pace not only affected district exports, but also served as a drag on the global economy. District exports decreased to Europe and China despite a slight depreciation of the U.S. dollar relative to the euro and China's yuan.

In other parts of the world, exports to Japan increased 11 percent in 2012 after decreasing slightly during 2011, the year of Japan's devastating tsunami. Manufactured exports to the Pacific Islands (primarily Australia), the Middle East and the former Soviet Republics posted a second consecutive year of double-digit increases. However, these three regions combined represent only 8 percent of total district exports.

Exports to developing countries now account for a larger share of district exports. In 1997, the district shipped just 20 percent of exports to developing countries. In 2012, that level had grown to 33 percent. The majority of these gains were attributed to China and Mexico. Exports to China increased from 1 percent of district manufactured exports in 1997 to 7 percent in 2012, while Mexico increased from 3.5 percent to over 8 percent.

Slower growth in 2012

Growth in manufacturing output and employment contributed to the economic recovery following the Great Recession (see the October 2012 *fedgazette*). These gains were aided by solid growth in exports during 2010 and 2011. Last year, both manufacturing and exports were more sluggish. According to the Institute for Supply Management survey of manufacturers, the index averaged 51.7 in 2012, down from 55.2 in 2011. While 2012 was still above 50, which indicates growth, the manufacturing sector was far from stellar.

A regional survey of manufacturers by Creighton University (Omaha, Neb.) shows that manufacturing appeared to increase in strength in 2012 in North Dakota; whereas, it appeared to decrease in strength in Minnesota and South Dakota while still remaining expansionary overall.

Oil boom benefits North Dakota exports

North Dakota was the only district state to post higher growth in manufactured exports in 2012 (26 percent) than in 2011. In 2012, strong growth was recorded to Canada (35 percent), Mexico (94 percent) and the Pacific Islands (52 percent), while exports to Europe decreased (-20 percent).

The oil boom is helping to boost overall manufactured exports from North Dakota, as the state shipped almost all of its $184 million in petroleum and coal product exports (from refineries, not raw supplies) to Canada during 2012, up from $65 million in 2011. This category accounts for 7 percent of exports from North Dakota, still a modest component, but is likely to increase as oil and gas refining capacity expands in the state. Chemicals also posted strong gains in North Dakota last year, increasing by 77 percent.

While petroleum and coal products and chemicals supported gains in North Dakota, these categories lost ground in Montana, which was the only district state to post an overall decrease during 2012 (-3 percent). Exports of chemicals from Montana decreased over the past two years, and the state's petroleum and coal product category posted a 7 percent decrease in 2012—this after more than doubling in both 2010 and 2011. f

North Dakota (continued)

Five largest manufactured export industries

	Total Exports 2012 (millions of dollars)	Annual Percent Change 2011-2012
Machinery, Except Electrical	1,154.9	11.8
Food and Kindred Products	357.5	51.8
Chemicals	334.3	76.6
Petroleum and Coal Products	183.5	181.9
Transportation Equipment	169.3	-17.1
Total Manufactured Exports	2,551.6	25.7

South Dakota

Five largest manufactured export destinations

	Total Exports 2012 (millions of dollars)	Annual Percent Change 2011-2012
Canada	656.1	34.1
Mexico	343.6	-11.7
Europe	127.0	-19.7
China	72.2	16.7
Japan	54.5	13.2
Total Manufactured Exports	1,478.5	7.3

Five largest manufactured export industries

	Total Exports 2012 (millions of dollars)	Annual Percent Change 2011-2012
Food and Kindred Products	514.9	1.9
Machinery, Except Electrical	292.7	10.4
Transportation Equipment	153.1	31.1
Beverages and Tobacco Products	135.2	-21.5
Computer and Electronic Products	122.3	9.2
Total Manufactured Exports	1,478.5	7.3

Wisconsin

Five largest manufactured export destinations

	Total Exports 2012 (millions of dollars)	Annual Percent Change 2011-2012
Canada	7,181.0	6.1
Europe	3,684.2	-5.3
Mexico	2,051.0	12.7
South America	1,712.7	-1.0
China	1,392.6	14.8
Total Manufactured Exports	21,891.7	5.6

Five largest manufactured export industries

	Total Exports 2012 (millions of dollars)	Annual Percent Change 2011-2012
Machinery, Except Electrical	7,000.1	24.9
Computer and Electronic Products	3,039.9	21.0
Transportation Equipment	1,826.8	-6.4
Food and Kindred Products	1,713.7	-13.5
Chemicals	1,627.9	30.6
Total Manufactured Exports	21,891.7	5.6

Source: WISERTrade: International Trade Database, Holyoke Community College

Bakken activity: How wide is the ripple effect?

By DULGUUN BATBOLD
Research Assistant

ROB GRUNEWALD
Economist

The Bakken oil boom has led to strong growth in employment and record low unemployment rates in that region. Tight labor markets and high wages in the Bakken have also given rise to countless anecdotes from business owners complaining of difficulty finding qualified workers and having to pay higher wages to keep them.

But how big is the impact of Bakken activity, and how far does it reach?

To assess the Bakken effect, county-level data on average weekly wage growth and unemployment rates were compared relative to a county's distance from the Bakken. The data are plotted in 100-mile concentric circles moving away from the 12 counties at the core of oil country (see map).

Not surprisingly, the strongest wage growth and lowest unemployment occurred in the immediate Bakken area, where average weekly wages have increased 140 percent since 2001, and unemployment has fallen to under 2 percent. From there, the effects dissipate (see Charts 1 and 2). Counties within 100 miles of the Bakken experienced the next-largest increase in wages and the next-lowest level of unemployment. At distances farther than 100 miles, the Bakken effect continues to show up with unemployment rates. For example, counties within 100 to 200 miles saw higher unemployment than those within 100 miles, but lower unemployment than those beyond 300 miles.

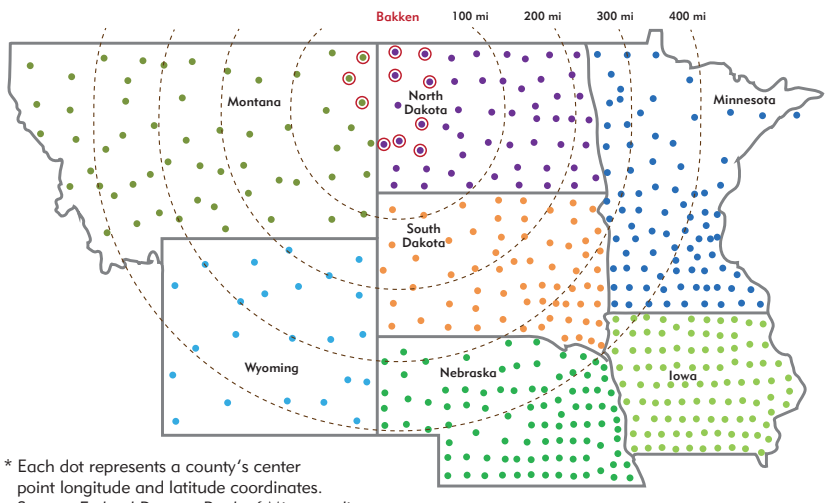
Interestingly, wage growth shows no additional Bakken effect after 100 miles. That is, counties 100 to 200 miles away have lower wage growth than those within 100 miles, but about the same wage growth as counties 200 to 300 miles away and those 300 to 400 miles away. This suggests that the Bakken reach, in terms of distance, is greater with respect to unemployment and less so with respect to wages.

This ripple effect on wages has been fairly recent, however. Wage growth in the Bakken began to separate from other counties in 2004 and accelerated after 2005, the start of the oil boom (see Chart 1). But wage growth in counties up to 100 miles away from the Bakken didn't separate from other non-Bakken counties until 2009.

Unemployment rates across these areas looked quite similar in 2003 and continued lower in a fairly tight band until about 2008. But a notable divergence sprouted in 2009. While rates went up across the board, they rose faster in relation to the distance from the Bakken. Beginning in 2010, unemployment rates started falling, but did so much faster in Bakken counties, and there is now a much wider spread of unemployment rates that adhere closely to the distance from the Bakken (see Chart 2).

As distance increases, many other factors likely explain wage gains or unemployment rates relative to distance from the Bakken. For example, more agriculture-intensive counties are also benefiting from the strong farm sector. Nevertheless, the negative correlation between wage growth and distance from the Bakken, as well as the positive correlation between unemployment and distance from the Bakken, has been growing stronger over time (see Chart 3). f

Coordinate map of counties surrounding the Bakken*

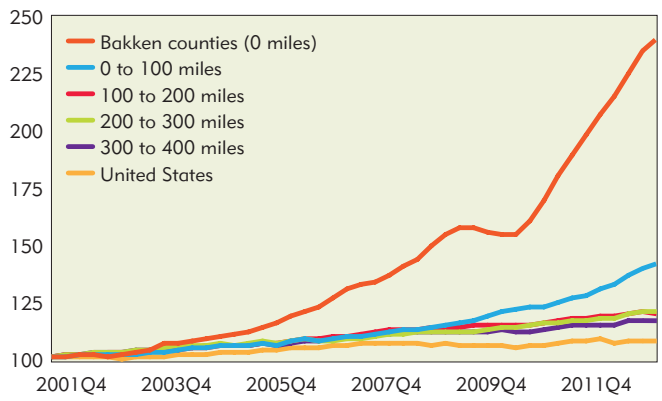


* Each dot represents a county's center point longitude and latitude coordinates.
Source: Federal Reserve Bank of Minneapolis

Chart 1

Index of average weekly wages by distance from the Bakken*

2001Q4=100, 4-quarter moving average, inflation-adjusted



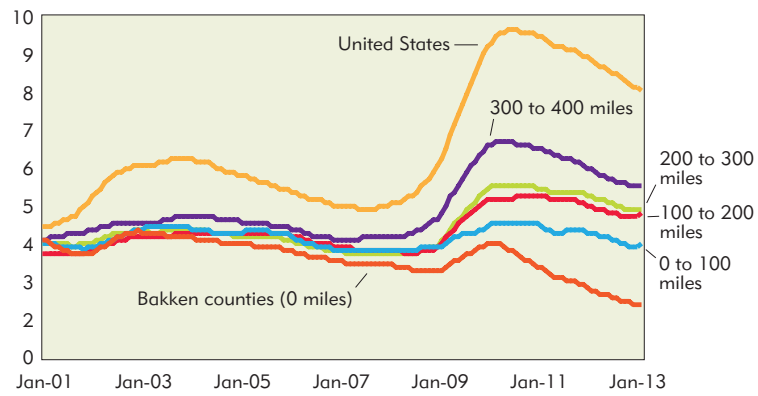
*Limited to counties in Iowa, Minnesota, Montana, Nebraska, North Dakota, South Dakota and Wyoming. Bakken area counties: Billings, Burke, Divide, Dunn, Golden Valley, McKenzie, Mountrail, Stark and Williams in North Dakota and Richland, Roosevelt and Sheridan in Montana; distance is calculated using center point longitude and latitude coordinates of counties. Averages weighted by employment levels.

Source: Estimates based on Bureau of Labor Statistics, QCEW data

Chart 2

Unemployment rate by distance from the Bakken*

12-month average



*Limited to counties in Iowa, Minnesota, Montana, Nebraska, North Dakota, South Dakota and Wyoming. Bakken area counties: Billings, Burke, Divide, Dunn, Golden Valley, McKenzie, Mountrail, Stark and Williams in North Dakota and Richland, Roosevelt and Sheridan in Montana; distance is calculated using center point longitude and latitude coordinates of counties. Unemployment rates calculated for each area.

Source: Estimates based on Bureau of Labor Statistics, LAUS data

Chart 3

Correlation with distance to the Bakken*

*Limited to counties in Iowa, Minnesota, Montana, Nebraska, North Dakota, South Dakota and Wyoming. Bakken area counties: Billings, Burke, Divide, Dunn, Golden Valley, McKenzie, Mountrail, Stark and Williams in North Dakota and Richland, Roosevelt and Sheridan in Montana; distance is calculated using center point longitude and latitude coordinates of counties. Wage growth represents year-over-year percent change in 4-quarter average weekly wages; unemployment rate is 12-month moving average.

Source: Based on data from Bureau of Labor Statistics, QCEW and LAUS

Annual Survey

Activity at professional services firms up, expected to continue

By TOBIAS MADDEN
Regional Economist

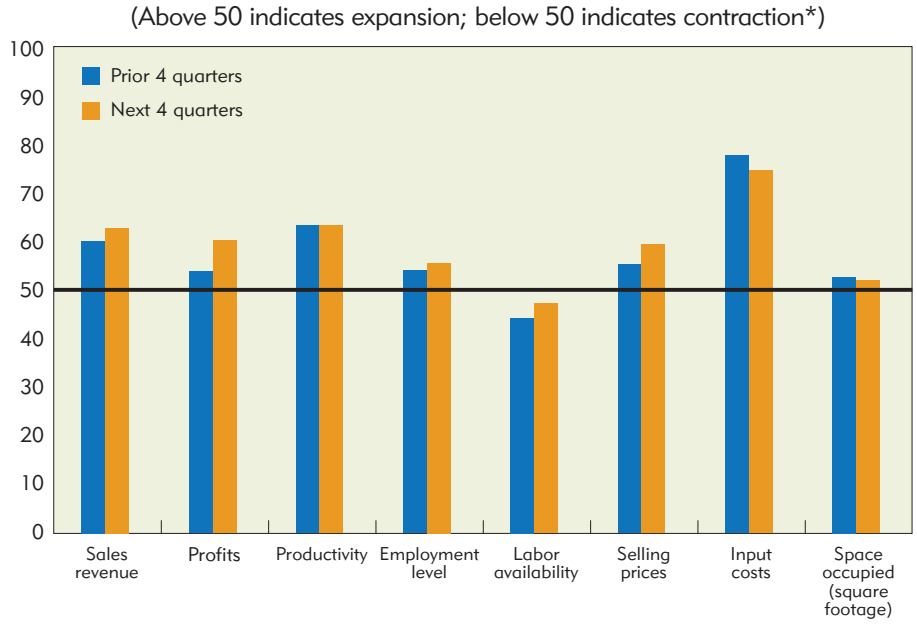
Accountants, engineers, graphic designers, market researchers, management consultants and other professional services providers had a decent year based on the annual survey of professional services firms conducted by the Federal Reserve Bank of Minneapolis and the Minnesota Department of Employment and Economic Development.

Over the past four quarters, professional services firms experienced solid growth, with increased sales and productivity (see chart). Slightly more firms reported higher profits than lower profits, as higher selling prices and volumes were partially offset by higher input costs and increased employment. Firms reported that labor availability was reduced, access to bank credit increased slightly and space usage was relatively flat. The outlook for the next four quarters is upbeat, as more respondents expect increases rather than decreases in sales prices and revenue, along with employment, productivity and profits. More employers expect their state's economy to pick up rather than slow down over the next four quarters.

Many services firms expanded over the past year. Forty-eight percent of firms reported increased sales versus 27 percent reporting decreases. This is consistent with the predictions made in last year's survey, in which 48 percent expected increased sales revenue and 16 percent expected decreases. This year's sales revenue increases were partially reflected by higher selling prices (26 percent said up and 10 percent said down) and additional employment (25 percent added employees and 17 percent reduced employees).

Professional business services firms expect to expand

(Above 50 indicates expansion; below 50 indicates contraction*)



* Percent of respondents indicating increase plus half indicating no change

Source: Federal Reserve Bank of Minneapolis; Minnesota Department of Employment and Economic Development

Overall profits increased slightly, with 41 percent of firms seeing higher profits compared with 35 percent reporting lower profits. Besides higher sales revenue, productivity also helped profits, as 37 percent reported more efficient operations, while 11 percent reported decreased productivity. Factors hindering profits included higher input costs, cited by 57 percent of respondents, while just 4 percent reported lower input costs. Compensation also increased: Wages per worker increased 2.4 percent over the past year, and benefits increased by an average of 2.1 percent. Available financing increased slightly over the past three months: 12 percent of respondents reported improved access to bank credit, while 9 percent reported more difficult access.

The services industry should continue to grow over the next year. Sales and profit increases are expected by 47 percent and 41 percent of respondents (respectively), compared with 19 percent and 22 percent (respectively) expecting decreases. More than half of respondents also anticipate higher input costs compared with just 4 percent expecting lower input costs. More firms expect selling prices to increase than decrease (28 percent and 10 percent) and productivity to improve (35 percent) rather than decline (9 percent). Wages and benefits for the coming year are expected to rise about 2 percent. Employment is expected to rise at 24 percent of the firms and drop at 11 percent.

When asked about the Affordable Care Act's effect on the employment mix, 13 percent reported that they already have shifted to more part-time workers, while 10 percent are planning a similar shift during the next two years. But more than three-quarters of respondents expected no shift to more part-time workers.

The firms expect their state economies to expand as well: 45 percent expect increased overall employment, while 12 percent expect to see falling employment in their state. As well, 43 percent of firms expect higher consumer spending. While corporate profits are expected to increase, 56 percent also expect higher inflation, with only 2 percent believing that inflation will decrease. f

Banks paring back their branches

It has taken some time for the ball to start rolling the other way, but banks across the country and Ninth District are slowly pulling back on branches. Call it "too small to bail."

The total number of Ninth District bank branches rose steadily from 2001 to 2006—increasing by nearly 25 percent—before plateauing during the recession. Branches saw some gains and losses over the next several years, but still rose on net from 2006 to the fourth quarter of 2009, to 3,027 branches. But since then, the Ninth District has officially lost about 70 branches (more on this in a bit; the actual number is likely higher).

The Upper Peninsula of Michigan has seen the biggest loss of branches, but the trend started well before the recession. Branches there peaked in 2004 at 172 and were down to 139 by the end of 2009. By the fourth quarter of last year, the U.P. had lost another six branches. Minnesota has shed 35 bank branches, but from a much larger base of more than 1,400 branches. Other district states (including northwestern Wisconsin, the only portion technically in the Ninth District) lost only a small handful of branches—even booming North Dakota saw branches drop by a half dozen over this period.

The outlier, with caveats, was Montana, which officially saw the number of branches rise by nine, or almost 3 percent since the end of 2009. However, at least part of this bump appears to come from full-fledged banks getting converted by a parent company to branch status. Last year, for example, Glacier Bancorp, one of the largest bank holding companies in that state, consolidated 11 bank subsidiaries—five of them in Montana—into a single commercial bank, effectively converting previously independent banks into branches; nothing else changed except the regulatory designation of the building.

At the same time, Montana is still something of an outlier in terms of total "banking service locations"—in essence, the number of banks plus branches. Montana saw a net-zero change from 2009 to 2012, while every other district state saw a decline of banking locations of between six (in the U.P.) and 72 (Minnesota).

For more information on the health of Ninth District banks, see the Minneapolis Fed's Banking Conditions website, which is updated quarterly.

—Ronald A. Wirtz

Economist Jason Schmidt contributed to this article.

District economy continues to move forward

By ROB GRUNEWALD
Economist

JOE MAHON
Economist

The district economy continues to move forward at a moderate pace that is expected to continue through 2014, according to the Minneapolis Fed's forecasting models and professional business services survey.

Stronger home building and rising home prices have supported the overall expansion, but have been counterbalanced by sluggish economies in Europe and China and fiscal concerns at the federal level. The Minneapolis Fed's forecasting model results are less optimistic than predictions made six months ago, but overall employment and personal income are expected to grow modestly through 2014.

2013 started with moderate growth

The national economy started the year with moderate growth. Gross domestic product grew at an annual rate of 2.4 percent during the first quarter after increasing 2.2 percent during 2012. The national economy has also added a monthly average of 200,000 jobs over the past six months. While still down 2.4 million jobs from a peak in January 2008, the recent pace of job growth is consistent with rising output.

Consumer spending has continued to increase despite a rollback of payroll tax cuts at the beginning of the year and is supported by recent gains in home and stock market prices, which give consumers more confidence in their financial position. Household net worth was still down 5 percent in the first quarter of 2013 compared with levels prior to the recession when accounting for inflation. Nevertheless, household finances are in much better shape after household net worth dropped more than 20 percent from 2007 to 2008.

Employment in the district grew somewhat slower than in the nation during the first part of 2013, except in North Dakota and eastern Montana, where growth is much stronger due to oil drilling and production. Employment in district states increased 0.6 percent in April compared with a year earlier, slower than the 1.6 percent growth nationally (see Chart 1).

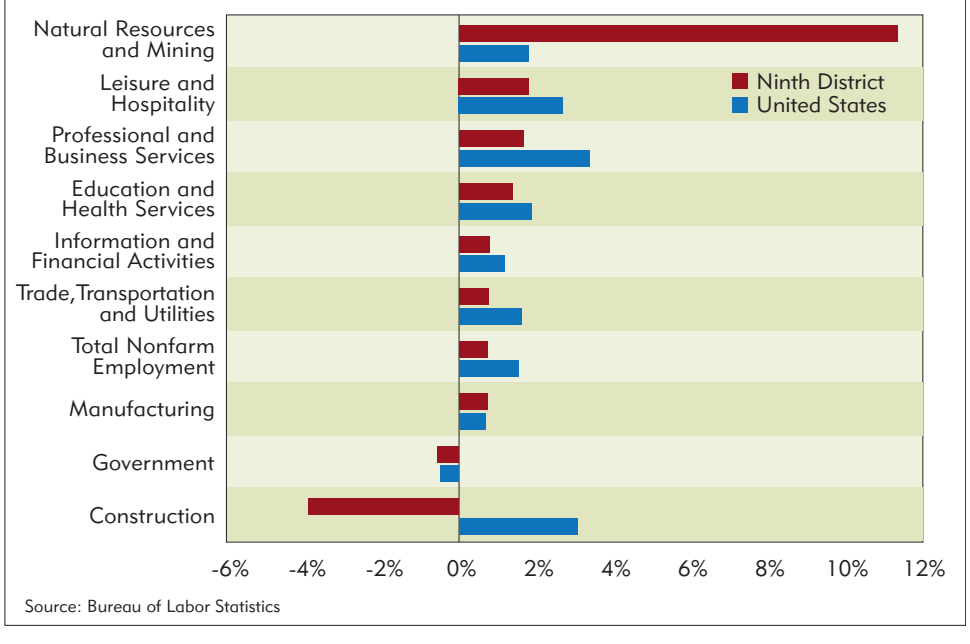
Some of the slowness in district employment growth is attributed to unseasonably cold and snowy weather during April, which particularly affected construction activity. Construction employment decreased 4 percent, the largest decrease among sectors. Government employment also slowed, which is consistent with fiscal tightening at the federal level and among some state and local governments.

Natural resources and mining led sectors with year-over-year employment growth at 11 percent, which was due mostly to oil drilling and production employment in the western part of the district. Solid employment gains were also recorded in leisure and hospitality (1.8 percent), professional and business services (1.6 percent) and education and health services (1.4 percent). Across district states, only North Dakota posted job growth faster than the nation, while job levels decreased in Wisconsin (see Chart 2).

Chart 1

Employment increased for most industries

Nonfarm employment, percent change from a year earlier, April 2013

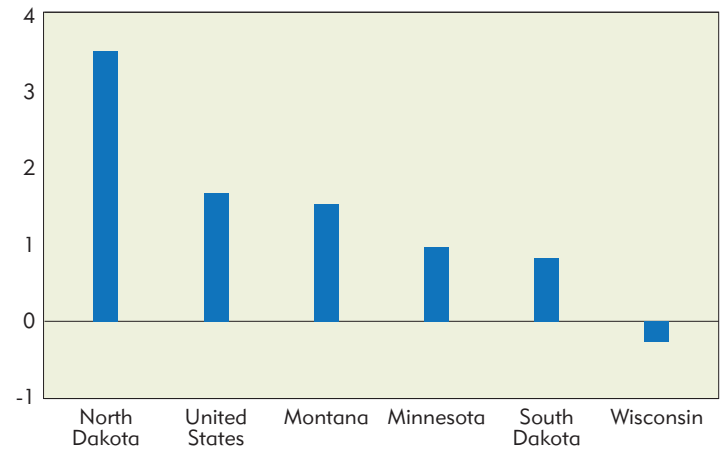


Source: Bureau of Labor Statistics

Chart 2

Strong job growth in North Dakota, losses in Wisconsin

Nonfarm employment, percent change from a year earlier, April 2013



Source: Bureau of Labor Statistics

Respondents to the professional business services survey reported that sales and employment increased overall during the past year, and growth is expected to continue over the upcoming year (see story on page 15). Meanwhile, sales at district-based retailers were mixed during the first part of 2013, with moderate increases and slight decreases reported. Consumers continue to face modest price increases; the consumer price index in May was only 1.4 percent higher than a year ago.

Tourism-related businesses in the district are relatively optimistic for the summer season. A Minnesota state tourism office survey of lodging and camping businesses in the state showed that 38 percent expect higher occupancy this summer, with 17 percent expecting lower occupancy. Forty-four percent of respondents also expected revenue to increase.

Housing grows; manufacturing facing headwinds

After years of decreases in residential real estate and construction activity, the housing market is bouncing back. According to the Minnesota Association of Realtors, the number of closed sales in Minnesota during the first five months of 2013 increased 1 percent compared with the same period in 2012, despite a 3 percent reduction in new listings. The average number of days on market decreased from 106 to 86.

At the same time, the average price for existing single-family homes during the first quarter increased 17 percent in Bismarck, N.D., 16 percent in Minneapolis-St. Paul, 9 percent in Fargo, N.D., and 5 percent in Sioux Falls, S.D., compared with a year earlier.

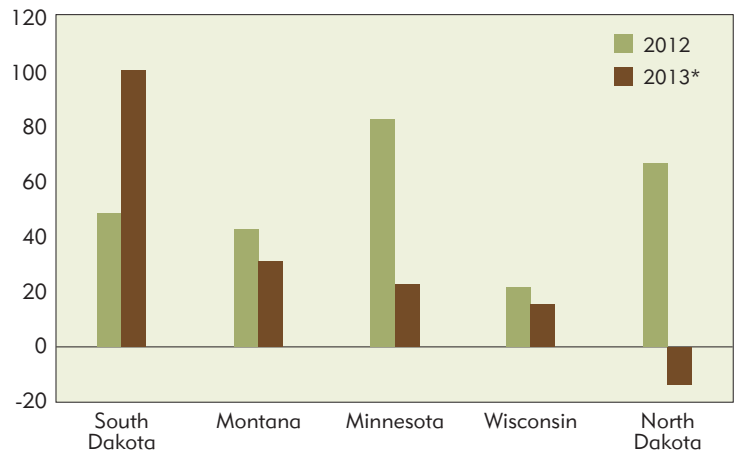
Tighter residential real estate markets and higher home prices have helped spur home building. Housing units authorized during 2012 posted strong gains in all district states (see Chart 3). Growth rates slowed during the first four months of 2013, except in South Dakota. Housing units authorized decreased somewhat in North Dakota through April, but this comes on the heels of strong housing gains since 2009. The slump in North Dakota's authorizations is a sign that the pace of home building growth in oil country is slowing, but home building is still at very high levels.

The district's manufacturing sector continues to grow, albeit not at the rate of the housing sector. A regional survey of manufacturers by Creighton University (Omaha, Neb.) shows that most firms experienced growth in manufacturing output in Minnesota and the Dakotas during the first five months of 2013. The sector showed a modest gain of 1 percent in exports during the first four months of 2013, down from a 4.5 percent increase during 2012 (see related story on page 12). Slowness in the global economy, particularly in Europe, and a smaller growth rate in Chi-

Chart 3

Solid home building growth

Housing units authorized
Percent change from a year earlier



* Percent change from April 2012 year-to-date to April 2013 year-to-date
Source: U.S. Census Bureau

na have negatively affected exports and manufacturing.

Additional headwinds for the district economy include reductions in government contracts and employment due to the federal sequestration. Some companies are also holding off on hiring new full-time employees until they learn more about the implications of health care reform for their businesses.

Forecasting models predict modest growth

Despite these challenges, the district economy is expected to continue to expand during 2013 and through 2014. According to the Minneapolis Fed's regional forecasting models, employment is expected to grow modestly in 2013 and 2014, with strong growth in North Dakota and slow growth in Wisconsin and the Upper Peninsula of Michigan. Unemployment rates are expected to remain somewhat level from 2013 into 2014, and personal income is predicted to expand modestly.

Overall, the forecast results are less optimistic than predictions made in January. For example, in January the models predicted a 1.8 percent employment growth rate for 2013, while in July the models predict a 0.9 percent growth rate (weighted average nonfarm employment growth). For 2014, the models predict a growth rate of 0.5 percent. Unseasonable late wintry weather this spring likely depressed employment levels in several areas of the district. The forecast model results may be lower as a result of incorporating this weather effect.

Personal income growth is expected to slow in 2013 to 1.4 percent after strong gains in 2012 (6.5 percent). Growth rates in 2012 were boosted by an acceleration of receipt of income, such as salary bonuses, into year-end 2012 in anticipation of changes in individual tax rates at the start of 2013. Not only does 2013 follow a strong year in 2012, but growth rates are restrained because of a payroll tax reduction that was phased out at the end of 2012. In 2014, personal income growth is expected to pick up in most district states.

For more details on the forecast, visit minneapolisfed.org..

Farmers get a late start on 2013

Last year's midyear outlook stated, "If the drought stays south, strong yields and higher prices could mean a windfall for district farmers." Indeed, this was the case for many areas of the district, especially Minnesota and North Dakota. However, parts of Montana, South Dakota and Wisconsin were hit harder by the drought, and livestock and dairy producers saw their input costs rise.

This growing season's outlook is somewhat weaker than it was a year ago. In contrast to 2012, the first half of 2013 saw a very late spring and heavy rains that significantly delayed planting of corn and soybeans. Emergence rates for those crops were well behind five-year averages as of mid-June, except in South Dakota. While the crops that did get in the ground are mostly in fair-to-excellent condition, a substantial number of acres did not get seeded prior to the application deadline for prevented planting insurance and are likely to stay unplanted or be used for other crops. The district's spring wheat crop, in contrast, has seen a more typical year.

The revenue outlook for crop producers is down. In addition to potentially smaller harvests due to early-season weather, the U.S. Department of Agriculture forecasts prices for corn, wheat and soybeans to decrease this year (see table). For animal producers, the outlook is stronger. Prices for cattle are at or near historic highs, while hog prices are off their peak but remain strong. Cattle prices are expected to climb a little higher over the next year, while hog prices should fall slightly. Reduced feed costs may aid profits. Dairy prices increased from last year's strong levels and are expected to moderate only slightly in the year ahead.

District farmers and ranchers are reporting a strong start to this year. According to the Minneapolis Fed's first-quarter (April 2013) agricultural credit conditions survey, 54 percent of respondents reported higher income and only 11 percent reported decreases. Agricultural lenders mostly expect farm profits to be flat in the second quarter of 2013, with 26 percent expecting increased income and 16 percent expecting decreased income. f

Crop prices projected to fall, dairy and cattle to increase

Average farm prices

	2010/2011	2011/2012	Estimated 2012/2013	Projected 2013/2014
(Current $ per bushel)				
Corn	5.18	6.22	6.75-7.15	4.40-5.20
Soybeans	11.30	20.50	14.35	9.75-11.75
Wheat	5.70	7.24	7.80	6.25-7.55

	2011	2012	Estimated 2013	Projected 2014
(Current $ per cwt)				
All Milk	20.14	18.53	19.60-20.00	18.95-19.95
Choice Steers	114.73	122.86	125.00-130.00	128.00-138.00
Barrows & Gilts	66.11	60.88	59.00-61.00	56.00-60.00

Source: U.S. Department of Agriculture, estimates as of June 2013

Higher sales activity, need for specialized staff have Ninth District businesses looking to hire

The Ninth District economy continues its expansion, according to a May survey of 232 business contacts from around the district. At about the same rate as a similar January poll, 41 percent plan to increase employment at their firms and only 8 percent plan to decrease employment.

Important factors cited for new hiring were increased sales, overworked staff, finding workers with new skills and less economic uncertainty. Businesses plan to obtain the workers through word of mouth and advertising. Seventeen percent plan to raise starting pay, compared with only 9 percent of respondents in the January poll.

For those respondents not planning to hire additional people this year, most said expected sales were low, and many reported that they wanted to keep costs down. A quarter reported that uncertainty about health insurance costs was the most important reason for not hiring.

Methodology: On May 13, the Minneapolis Fed invited, via email, about 1,000 Beige Book contacts from around the Ninth District to answer special questions in a web-based survey. By May 14, 232 contacts had filled out the survey. The respondents come from a variety of industries.

—Tobias Madden

Driving to the bank: Auto loans rebounding in Ninth District

Maybe people like their cars more than their homes. While the housing market appears to be finally finding its legs, auto sales have been on a tear—especially in the Ninth District.

During and subsequent to the Great Recession, total auto loan debt declined precipitously to its trough around the end of 2011 (see first set of charts). Since then, however, auto loans have been squealing the tires. In the district, inflation-adjusted auto loan debt rose to 98 percent of prerecession levels, while national auto loan balances are at 88 percent, according to data from the Federal Reserve Bank of New York Credit Panel/Equifax.

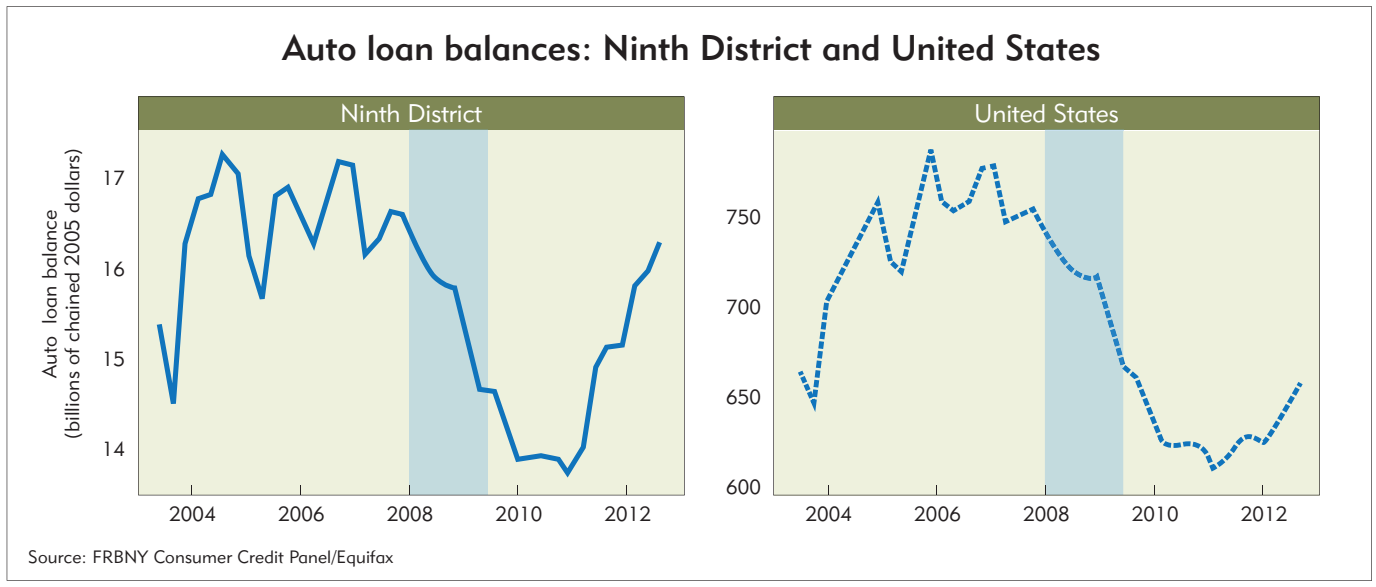
The lending rebound has been shared among various financing options, but banks are in the lead car, particularly in the Ninth District. Federal Reserve Bank of New York Credit Panel/Equifax data show that banks (which include credit unions and savings and loans) hold the majority of vehicle loan debt in the district, and debt balances didn't dip as far during the recession. Debt balances have since rebounded above prerecession levels, to $9.5 billion (see charts below). At the same time, vehicle loan debt held by finance companies (dealers and auto or sales finance companies, like car makers) plunged during the recession and remains considerably below the prerecession peak.

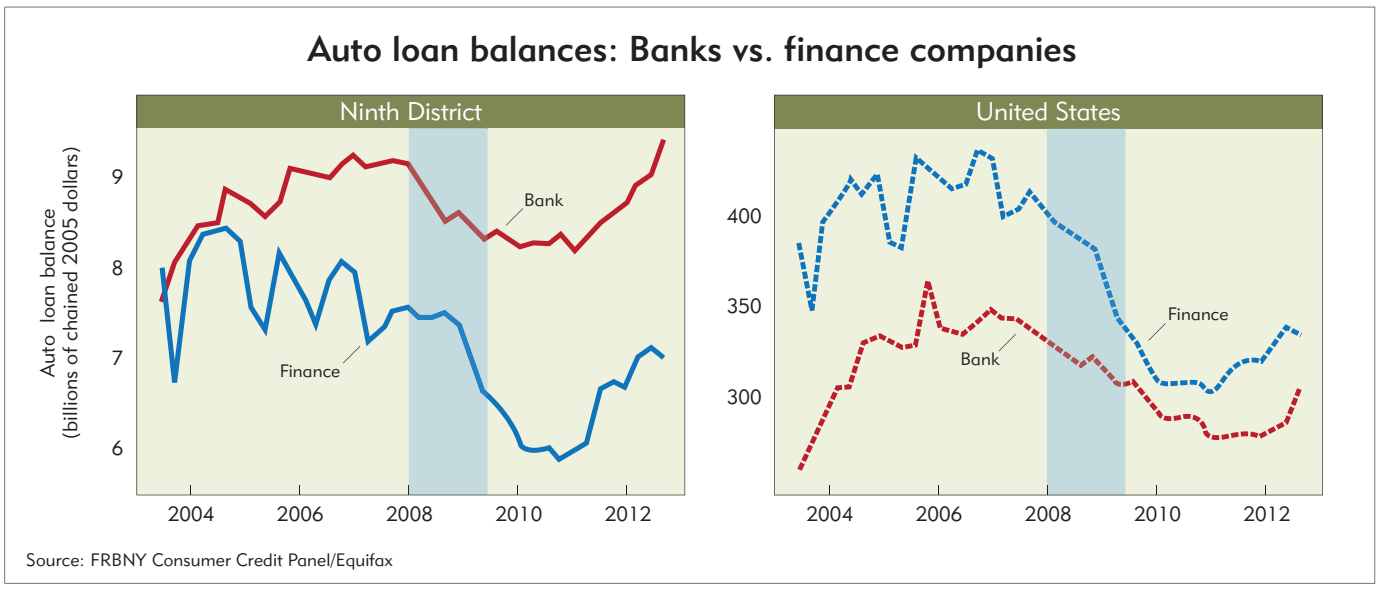
Nationally, the share is flipped. Finance companies still account for a majority of loans, but the margin has narrowed, in part because finance company loans saw a steeper drop through 2010 compared to banks, and their subsequent growth since 2011 has been very modest.

Performance among Ninth District states has varied—in fact, some states saw inflation-adjusted auto loan balances decline well before the recession. Northwestern Wisconsin has experienced little recovery since the end of the recession; by the end of 2012, real auto loan balances stand at only 90 percent of 2003 levels. At the other end of the spectrum, North Dakota auto loan balances are 40 percent higher over the same period. Other district states lie somewhere in the middle, though Montana did have a notable runup in debt levels prior to the onset of the recession.

Creditworthiness and delinquency also play a big role in the rebound. Vehicle loan balances generally dropped less during the recession and rose more afterward as borrower Equifax Risk Scores rose. So-called super-prime borrowers are responsible for a large percentage of vehicle debt, and they have been taking advantage of their access to credit to take out more vehicle loans given today's low interest rates. And, again, this trend has been more prevalent in the Ninth District. Ninth District loan delinquency rates also have been well above national rates before, during and after the recession.

—Ronald A. Wirtz





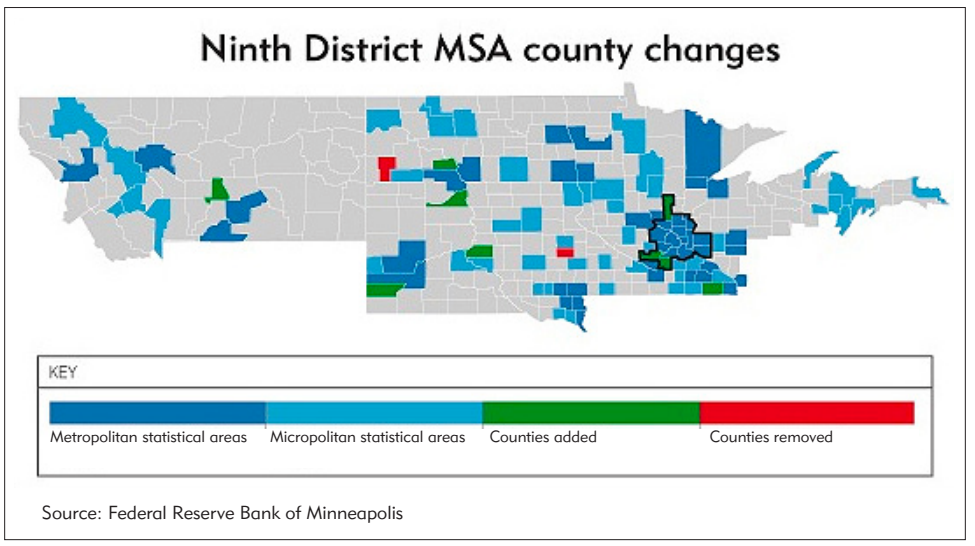
Some Ninth District MSAs gained or lost counties

Every few years, the White House's Office of Management and Budget revises the definitions of MSAs (metropolitan and micropolitan statistical areas). This is important for analyzing all sorts of information. In late February, the OMB published the new delineations. Ninth District MSAs added nine counties and lost two (see map).

The nine counties that were added include three to the Minneapolis-St. Paul-Bloomington region, which now encompasses 16 counties in Minnesota and Wisconsin (see map; the Twin Cities metro is outlined). Two were also added to the fast-growing Bismarck, N.D., region. Other MSAs that added one county are Billings, Mont.; Rapid City, S.D.; and Rochester, Minn. Pierre, S.D., is the only micropolitan statistical area that added a county.

The two counties dropped are also from micropolitan designations—Billings, N.D. (estimated population 905) and Hamlin, S.D. (estimated population of 5,918), presumably because of small, rural populations.

—Tobias Madden



The economic impact of closing Minnesota's achievement gap: A theoretical construct

An education achievement gap by race and income has long persisted in the nation and in Minnesota. While there is a clear moral argument for closing the gap, there are some compelling economic ones as well. Differences in high school graduation rates and achievement scores between white students and Native American, black and Hispanic students in Minnesota are some of the largest in the country. The chart at right shows a substantial difference in average math scores of white and black eighth grade students since 2003.

If test scores of black and Latino students and low-income students could be raised to those of white and higher-income students, presumably graduation rates would increase, as would the overall skills of the workforce, leading to productivity gains and stronger economic growth. But by how much, and what net effect would it have for closing these gaps in Minnesota?

A 2009 McKinsey report, using a methodology developed by Eric Hanushek in a 2008 study in the *Journal of Economic Literature*, projects that national GDP in 2008 could have been 2 percent to 4 percent higher had the United States bridged the racial achievement gap by raising the performance of black and Latino students to that of white students by 1998 after a successful 15-year reform period. The report estimates that GDP could have been 3 percent to 5 percent higher had the United States closed the income achievement gap by raising the performance of students with household incomes below $25,000 to that of students with higher household incomes.

The same framework discussed in the McKinsey report was applied to Minnesota using National Assessment of Educational Progress (NAEP) data for the last five survey years. Closing the racial achievement gap for eighth grade students in Minnesota would improve the state's overall average math scores by about 2 percent; closing the income achievement gap would improve average math scores by about 3 percent.

Using Hanushek's estimate—that long-run GDP growth rate increases by 1.3 percentage points per standard deviation improvement in test scores (about 0.6 percentage points per 10 percent increase in average test scores)—closing the achievement gap in Minnesota would translate into a 0.1 to 0.3 percentage point increase in the long-run economic growth rate.

Even a small change in a growth rate over time adds up. For example, if a hypothetical 15-year reform plan could close the achievement gaps, the level of Minnesota's GDP would diverge from trend, raising the GDP level by 1 percent or more after 30 years and by more than 3 percent to 6 percent after 50 years (see table above).

In terms of dollars, these increases translate to a few hundred million dollars per annum after 15 years from the start of the reform period to a couple of billion dollars after 30 years to more than $10 billion after 50 years. In 2011, Minnesota's real GDP was $282 billion. However, caution should be used with these projections because it's unclear whether Hanushek's estimate applies at the state level.

The calculated economic impact of closing the achievement gap in Minnesota is smaller than the national estimates by McKinsey. One explanation is the lower percentage of black and Latino students in Minnesota (14 percent) relative to the national average (36 percent). Likewise, low-income students also comprise a smaller percent of population in Minnesota than in the nation.

Another explanation could be different assumptions used in McKinsey's and Hanushek's models. For example, the McKinsey report assumes that after the 15-year reform period, the entire black and Latino workforce achieves the projected gains in cognitive skills commensurate with the closing of the achievement gap in test scores. Hanushek's paper assumes a more gradual displacement of the existing workforce with higher-quality graduates. Correspondingly, estimates for Minnesota using this assumption yield a smaller impact of bridging the gap.

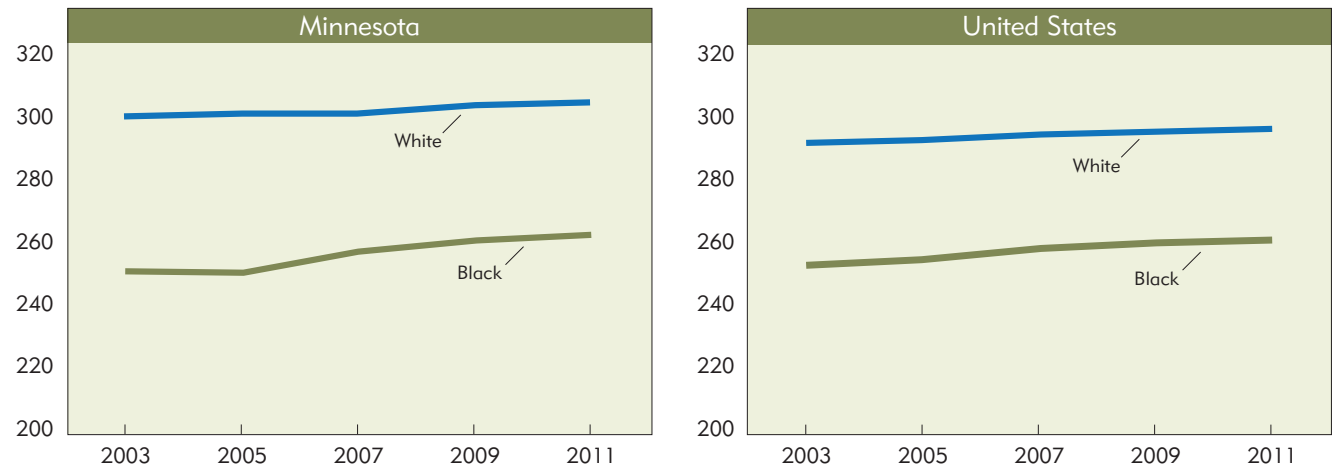
Even if the economic impact of closing the gap is estimated to be smaller in Minnesota than nationally, it is by no means a trivial one. As anyone planning a retirement learns, small changes in growth rates can have a big impact on the future value of investments, more so for longer-term investments.

Furthermore, this analysis doesn't take into account benefits to government from closing the achievement gap, such as reductions in remedial education and crime costs, and eventually higher tax revenue, nor does this analysis estimate the cost of a 15-year education reform. Both of these data points are needed to assess whether the government would achieve a positive rate of return from investing in education reform. An analysis by Henry Levin and colleagues suggests that investments in early childhood education and some reforms for school-age children do just that.

And, finally, this is not the only achievement gap whose closure would likely lead to faster economic growth. Nationally, for example, Asian students have the highest average test scores. If, hypothetically, educational reform could boost the performance of white students to the level of Asian students, overall average math scores would increase by about 2 percent, with about a 0.2 percentage point increase in economic growth. Furthermore, if test scores of all non-Asian students were raised to the average of Asian students, average math scores would increase by over 6 percent, with about a 0.6 percentage point increase in economic growth, almost 70 percent larger than the effect of closing the black-Hispanic and white achievement gap. This particular analysis, however, isn't relevant to Minnesota, where average test scores for Asian students are lower than both Asian students nationwide and Minnesota white students.

—Rob Grunewald and Dulguun Batbold

Racial achievement gap in grade 8 math scores



Note that 36 points = about 1 standard deviation.
Source: National Assessment of Educational Progress

Estimated percent increase in Minnesota GDP level from start of achievement gap reform

	15 years	30 years	50 years
Race achievement gap	0.1	1.0	3.6
Income achievement gap	0.2	1.8	6.4

Source: Authors' calculations

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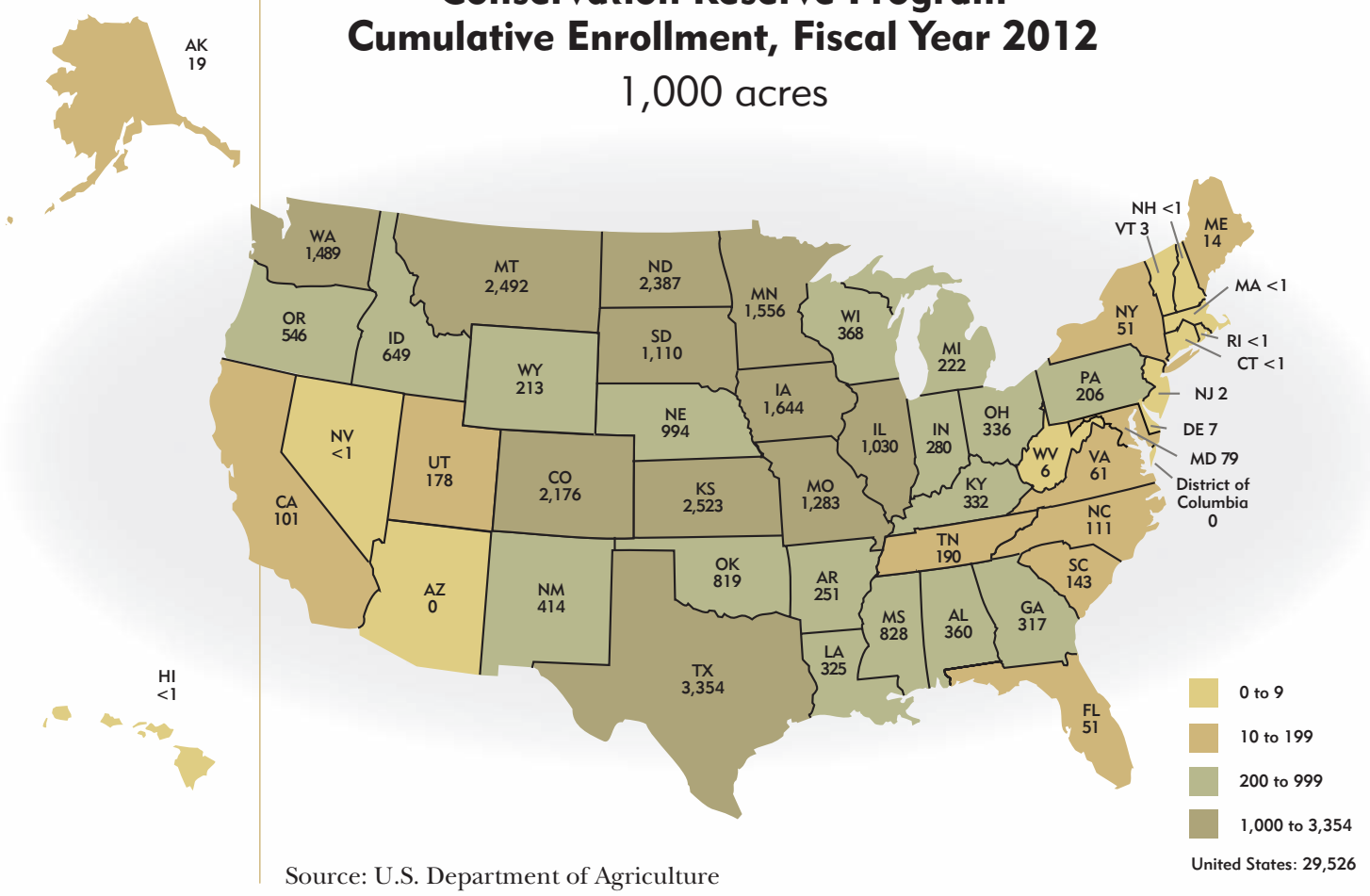

Source: U.S. Department of Agriculture