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Tapping the Shale Revolution

The United States is awash in natural gas. Much of this valuable energy resource is trapped in hard-to-reach places, but recent technological advancements in hydraulic fracturing and horizontal directional drilling have produced a boom in natural gas production in states such as Pennsylvania, West Virginia and Texas.

According to energy analyst Robert Bryce, it's hard to overstate the economic impact of this so-called "Shale Revolution." Bryce contends that increased energy production from shale will not only play an important role in the nation's overall energy portfolio, it will also unleash an industrial renaissance in this country.

The main obstacle, Bryce argues, resides in the realm of public policy. Across the country, environmental groups are attacking the gas extraction process known as hydraulic fracturing, or "fracking." Fracking involves blasting water, sand and chemicals into rock formations so oil and natural gas can escape. Environmental groups are claiming the process is not safe and can pollute groundwater. But Bryce, a fellow with the conservative Manhattan Institute think-tank, dismisses many of their claims and says the fight over fracking is really a proxy for the fight over land-use issues that come with increased drilling.

OUTLOOK: Characterize the importance of the recent shale boom to the overall American economy.

Robert Bryce: The developments over the past three to four years, collectively known as the "shale revolution," are the single biggest developments in the North American energy story since the discovery of the East Texas Oil Field in 1930. The combination of hydraulic fracturing and long-reach horizontal drilling is changing how the United States positions itself with the rest of the world in regard to not only energy but also carbon dioxide emissions.

The U.S. is now the single biggest natural gas producer in the world. This will fundamentally change the U.S. energy supply picture over the coming decades. And it will benefit consumers, too. From 2005 to 2008, the average price for natural gas was over \$7 per 1,000 cubic feet. Today, it's under \$4. That price drop represents a savings to U.S. consumers of \$60 billion a year.

The surge in drilling means a dramatic increase in employment in states that have shale and a dramatic increase in employment in industries related to drilling.

About this article



Robert Bryce is a Texas-based author and journalist who has written articles on energy, politics, and other topics for the *New York Times*, *Washington Post*, *Wall Street Journal*, *Counterpunch*, and *Atlantic Monthly*. He is a senior fellow at the Manhattan Institute and has appeared on TV and radio shows including BBC, PBS, CNBC and Fox Business.

And it's not just about shale gas; it's also about shale oil. We've seen a dramatic turnaround in domestic oil production. The United States is now reversing a decades-long downward trend in oil production, and some analysts are predicting that U.S. oil production could increase by as much as 2 million barrels a day over the next five years. The U.S. rig count for the last week in November was 2,000. That's an increase of more than 300 from a year ago and that's a dramatic increase from two to three years ago when drilling fell off dramatically because of the financial crisis.

OUTLOOK: What will the economic effect be in states that have shale?

RB: If you have more rigs drilling, then you have more people working. In the last 18 months alone, the oil and gas industry in Pennsylvania has hired about 50,000 new workers. This past summer, Halliburton announced that it would hire 11,000 workers this year in North America – most of them in the United States working on shale-related projects.

This surge in drilling means a dramatic increase in employment in states that have shale and a dramatic employment increase in other industries related to drilling. And then, due to the low cost of “feedstocks” – that includes natural gas and the natural gas liquids that are coming onto the market because of all of this drilling – we're creating, or re-creating, entire new industries such as petrochemicals and steel.

OUTLOOK: You contend that increased natural gas drilling can help revive the manufacturing base in the United States? How so?

RB: Since the shale revolution began, we've seen a huge increase in the U.S. production of propane and ethane, which are found in natural gas and oil as it comes out of the ground. Those two ingredients are critical to petrochemical manufacturing. That increased production has led to a number of announcements from petrochemical manufacturers that they're going to build new plants in the United States. They make everything from plastic drinking cups to milk jugs to thread for your clothes to plastic casing around televisions. We've had multiple announcements from companies that are expanding or building new plants in Texas and Louisiana. We'll also see new petrochemical plants in Appalachia. Those new projects will create a huge number of construction jobs to build the plants, and then once they're built, it will mean large numbers of high-paying jobs to staff them.

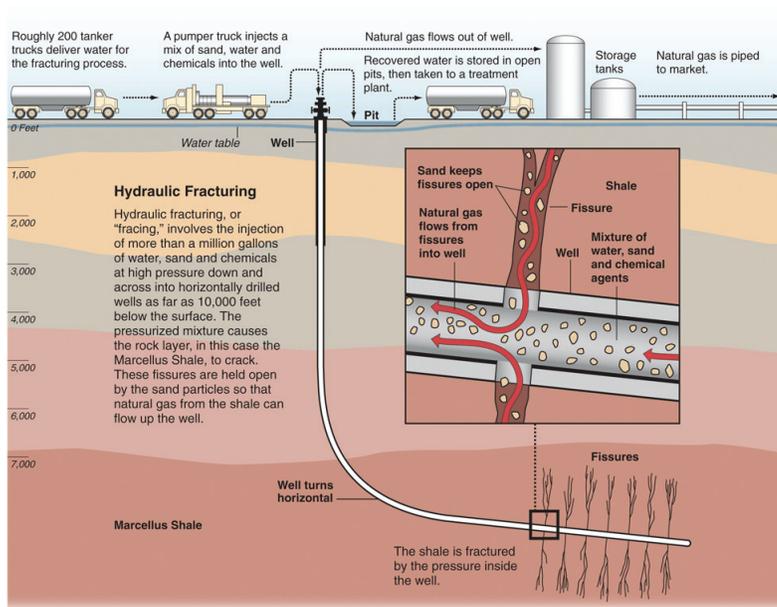
OUTLOOK: What other industries will benefit?

RB: The steel industry uses huge quantities of energy. In the past, it was heavily dependent on metallurgical coal. They've found they can now use natural gas in place of coal. And if you have low-cost natural gas, and you can get a long-term supply of it, it suddenly makes the United States more attractive than overseas locations for that steel production. In the past year, we've seen Nucor, the largest steel producer in the country, begin construction of a major new steel plant in Louisiana. They'll spend \$750 million on the plant, but Nucor has said it may invest as much as \$3 billion on new production capacity in Louisiana. They'll use a process at the plant called direct-reduced-iron, in which they use super-heated natural gas as a key energy source. It allows them to produce steel more cheaply and with lower carbon emissions than if they were using coal. There are multiple wins here. They'll create up to 1,000 high-paying jobs, produce steel at a lower cost than their overseas competitors, and they'll do so with less air emissions.

OUTLOOK: The overall cost advantages of natural gas compared to coal seem significant.

RB: Throughout society we're moving toward things that are smaller, faster, lighter, denser and cheaper, and the move to natural gas is part of that. It's

HYDRAULIC FRACTURING



Source: ProPublica
Graphic by: Al Granberg

lighter. It has good density in terms of the amount of hydrogen relative to the amount of carbon, and it's cheap. Think about a utility. If you're going to build a new power plant, you know that coal is clearly under regulatory attack for a number of reasons, including air emissions. You're going to need a big area to store the coal and you'll need a rail line coming by the plant. And you're going to need expensive scrubbers to meet air quality regulations. Compare that to the small footprint that comes with a gas pipeline that people can't even see, and if you use that gas pipeline to feed a fuel cell, then there are no air emission issues at all. Or assume you use a conventional natural gas-generated turbine. The footprint for that turbine would be a fraction of that required for a coal-fired power plant. It makes a whole lot of sense in terms of less capital cost and in reducing potential for pushback from the public.

We've seen a lot of news coverage [on fracking], almost all of it negative.... But the reality is this is a very old practice, it is well-regulated and almost all of fears about this process are dramatically overblown.

OUTLOOK: How big of a drawback is the historic volatility we've seen in the price of natural gas?

RB: That's always been a concern. Prices have been volatile. In the 1970s, natural gas prices went through the roof. To be blunt, it was too much federal government intervention in the market, and numerous studies have shown that. Regulations constrained drilling for new natural gas resources, and that led to a shortage. If you're a utility executive and you have to produce electricity 24 hours a day, seven days a week, there is some comfort in looking out into the yard and seeing a big pile of coal that you know will last you for a month. With a gas pipeline you're not necessarily assured of that. You are instead betting on reliability of the supplier and betting that the price you locked in will stay not just for six months but for six years or whatever the length of time might be. The volatility of pricing is always a concern for everyone, and with natural gas it's extra important.

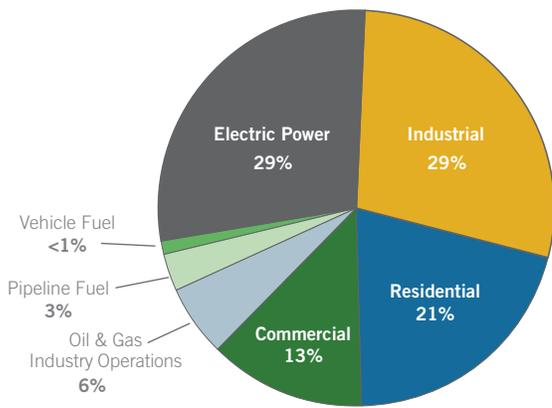
OUTLOOK How has the natural gas drilling boom helped increase oil production?

RB: In shale formations, you can produce oil and gas together. Drillers are looking at low natural gas prices and are seeing that they can make more money by targeting areas in the shale formations where they can produce oil, too. Right now we see more rigs that are targeted to oil production than gas production – a reversal from a year or so ago. The result: They're producing more oil, and the natural gas coming out of the ground is almost a side benefit.

OUTLOOK: Hydraulic fracturing has grown more controversial in recent years. How much of a role is it playing in the drilling boom?

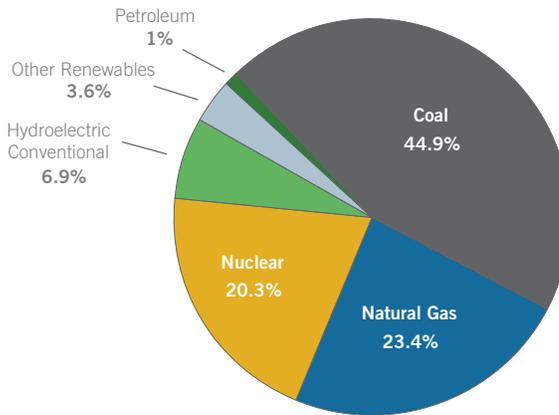
RB: It's absolutely pivotal. We've seen a lot of news coverage, almost all of it negative, along with a huge amount of pushback from environmental groups claiming it's dangerous and it's not regulated. But the reality is this is a proven technology, it is well-regulated and most of the fears about it are dramatically overblown.

NATURAL GAS USE, 2008



Source: Energy Information Administration, Natural Gas Annual 2008 (August 2009)

2009 U.S. ELECTRICITY GENERATION BY SOURCE



Source: Energy Information Administration (EIA)

OUTLOOK: How long has fracking been around and why do you think it's safe?

RB: It's been around for about 60 years, and it's been used on over 1 million wells in the United States. When people claim that hydraulic fracturing is a danger to groundwater, they are ignoring several basic facts. First, the target zone for hydraulic fracturing in almost every case is at least a mile below the geologic zone where drinking water supplies are located. The well operator and the drillers make certain to have several layers of pipe between the interior of the well and the exterior. The last thing any driller or operator wants is to have contact with groundwater in the surrounding area because that means there's a problem with the well and it won't produce properly.

The key issue here is one of image. For decades, the public has been conditioned to hate the oil and gas industry. Now we have a technology that can fundamentally change the energy picture in the U.S., but through very clever campaigns and simple slogans, environmental groups are capitalizing on this decades-long enmity toward the oil and gas industry. They've made hydraulic fracturing the issue when in fact these breakthroughs in hydraulic fracturing are like a gift from God for the United States.

OUTLOOK: A 2004 study by the Environmental Protection Agency found that hydraulic fracturing posed no risk to drinking water and Congress even exempted it from the Safe Drinking Water Act. So why did it suddenly become so controversial?

RB: The increase in drilling is bringing a lot of rigs into areas where there wasn't drilling before, particularly in Pennsylvania and New York. The issue isn't really hydraulic fracturing. Instead, fracturing has become a proxy for other issues such as more truck traffic, air issues and others.

OUTLOOK: Critics argue that fracking has led to contamination of water supplies and point to more than 1,000 cases of contamination that have been documented by courts and state and local governments in Colorado, New Mexico, Alabama, Ohio and Pennsylvania. What do make of their arguments?

RB: For people who want to promote this idea that fracturing is bad, all they have to do is produce one video clip showing someone lighting water from their kitchen sink on fire, and it gets replayed over and over and many people will then think that's going to happen to them if there's hydraulic fracturing in their region. In that specific case, of gas being lit on fire in a Colorado kitchen, the state's environmental authorities investigated it and found it had nothing to do with oil and gas drilling. It was due to biogenic gas, or naturally occurring methane, that was in that groundwater. But that doesn't make it on television, does it?

OUTLOOK: The EPA is studying fracking again with a final report due in 2014. Do you think it will end the controversies?

RB: It won't. The pushback against the oil and gas business has been ongoing for decades. The message of those who oppose drilling is easy and fits on a bumpersticker: "Big Oil will pollute your water." What's the oil and gas sector's response?

"Oh no, we won't." From a PR standpoint, the industry has already lost.

OUTLOOK: Wouldn't it help end some of the mystery and controversy if the industry simply disclosed the ingredients of its fracking fluid?

RB: Disclosure is imperative and the industry is already responding. Look at fracfocus.org, which is a joint project of the Interstate Oil and Gas Compact Commission and the Groundwater Protection Council. Many companies are using fracfocus.org so they can disclose all of the ingredients in their fracturing fluids. But again, this is a battle for public opinion. And it will be a long

SHALE GAS RESOURCES



Source: American Gas Association

These technologies of long-reach horizontal drilling and hydraulic fracturing are helping companies around the world unlock galaxies of natural gas.

battle between the anti-drilling forces and the oil and gas industry. It will last for years into the future and there's no way around it. The industry's only option is to be more open and more transparent. They just have to be better all around.

OUTLOOK: Are other countries using fracking?

RB: Yes. The shale revolution started here but it's going global. It has tremendous potential to change the energy picture around the world in the next decade or two. There's now shale drilling in Poland, Eastern Europe and in China, Australia and South America. These technologies of long-reach horizontal drilling and hydraulic fracturing are helping companies around the world unlock galaxies of natural gas. The world is awash in natural gas and by helping unlock that methane, these technologies are providing unbelievably good news for the global economy.

I'm optimistic, even amid all of the pushback. The opportunities presented by low cost natural gas are so compelling that eventually this fuel source is going to come to the market in great abundance. It's just incredibly good news.

OUTLOOK: What role will natural gas play in the country's future energy portfolio?

RB: It's critical. The U.S. gets 24 percent of its electricity from natural gas. It is viable as a transportation fuel but it will take a long time to move a significant portion of the country's transportation fleet away from gasoline and diesel fuel to natural gas. That said, natural gas provides a hedge against the oil market if oil prices get too high.

Natural gas also plays an essential role in space heating for the residential and commercial markets. And it's essential for industrial uses, such as petrochemicals, refining, process heating, and steel production. The U.S. is turning into the Saudi Arabia of natural gas. Indeed, serious people are now talking about exporting liquefied natural gas from the U.S. to Europe. That idea would have been thought a joke just three years ago.

U.S. energy policy should be very simple: We should aim to keep energy cheap, abundant and reliable. If we can do those things over the long term then we can put people back to work and revive the economy. If energy is expensive and scarce and sporadic, it will wreak havoc on the economy. ■

The Transformation of Corporate America

It is a time of turmoil, fear, and uncertainty. Politicians debate the proper role of government and grapple with a crippling public debt. Nervous businesses hire few employees and fail to grow. Entrepreneurs and potential investors await signs of fiscal stability before committing their cash...

If that sounds like a story ripped from today's front pages, it actually describes the economic landscape of the United States immediately after the Revolutionary War, says political economist and historian Robert E. Wright.

Independence from England in 1781 was obviously a huge step towards freedom and prosperity for Americans. Yet it wasn't until the ratification of the Constitution nearly a decade later that the country felt on a sufficiently firm footing to begin realizing its vast economic potential, says Wright, Nef Family Chair of Political Economy at Augustana College in South Dakota.

Wright, author of 14 books including *One Nation Under Debt*, recently published a study called "Rise of the Corporation Nation," which appeared in the 2011 book, *Founding Choices: American Economic Policy in the 1790s*, by the National Bureau of Economic Research.

Delving into early American records and documents, Wright found striking evidence that the Constitution, with its separation of powers, respect for property rights, and limitations on government authority, helped unleash one of the greatest periods of entrepreneurial activity and economic growth in history. "The development of the for-profit business corporation was one of the most original and important aspects of the new nation's institutional transformation," he writes. "Within a generation, America became the world's leader in corporate development, including the number of corporations and the sophistication and flexibility of its innovative corporate laws."

Without suggesting that we roll back our political or economic clocks to the 1790s, Wright believes that many of the standards and practices of our political and economic forbears hold important clues on how the United States might solve its monumental 21st-century challenges.

OUTLOOK: What did business in the United States look like prior to the Constitution?

Robert E. Wright: Most were what we would today call microbusinesses. Business owners had little faith in the government's ability to protect or even respect private property. Most were sole proprietors engaged in small manufacturing or trade, and few had employees. Some would have an apprentice, or a slave or two, and perhaps the owner would hire an employee during periods of peak demand. Then there were partnerships in which anywhere from two to five people would pool their resources. Partners were usually related by blood or marriage, because they were responsible

About this article



Political economist and historian Robert E. Wright is the Nef Family Chair of Political Economy at

Augustana College in South Dakota. He also authored the book *One Nation Under Debt* and recently published a study called "Rise of the Corporation Nation," which appeared in the 2011 book, *Founding Choices: American Economic Policy in the 1790s*, by the National Bureau of Economic Research.

under common law for each other's debts and so had to watch each other very carefully. Forming partnerships with relative strangers was a huge risk, because they would pilfer from each other, sign promissory notes and abscond, leaving the other partners with the debts.

OUTLOOK: What happened once the Constitution was ratified in 1789?

REW: The business landscape was fundamentally changed by a sudden rise in business corporations. In the entire century leading up to the American Revolution there were a total of about a dozen corporations in the American colonies. Not much is known about them; some we know only by passing reference. In the eight years between the end of the Revolutionary War and the passage of the Constitution the rate was faster but hardly flourishing, with another dozen or so formed. The most successful were a mutual fire insurance company and a mutual life insurance company, both in Philadelphia.

After 1790, we see, first, a couple dozen forming every year, then a couple of hundred per year, and by the time we get to the 1830s you've got single years in which more than a thousand corporations were established.

OUTLOOK: How did these new corporations differ from the earlier businesses?

REW: The risk structure changed, enabling companies to get bigger and attract outside investors. Unlike with partnerships, you didn't have to go all in. You could decide how many shares you wanted to buy. People didn't have quite the understanding of limited liability that we have today, but it became clear that if you bought a couple of shares of a corporation, you weren't going to be held responsible for anything beyond that. So you could limit your exposure, and also diversify your portfolio, as we would say today. If you had a thousand dollars, you could put \$100 into ten different corporations.

Another big advantage was perpetual succession. Under common law partnerships, if one of the partners suddenly died or withdrew, the firm had to dissolve,

TOP 10 U.S. CORPORATIONS, BY REVENUE

1. Wal-Mart stores	Headquartered in Bentonville, Arkansas, Wal-Mart had \$408 billion in revenues and \$14.3 billion in profits in 2009.
2. Exxon Mobil	Headquartered in Irving, Texas, Exxon Mobil had \$284.6 billion in revenues and \$19.3 billion in profits in 2009.
3. Chevron	Despite a difficult year, Chevron had \$163.5 billion in revenues and \$10.5 billion in profits in 2009. Chevron is headquartered in San Ramon, CA.
4. General Electric	Headquartered in Fairfield, Connecticut, GE had \$156.8 billion in revenues and \$11.0 billion in profits in 2009.
5. Bank of America Corp.	Headquartered in Charlotte, North Carolina, Bank of America had \$150.4 billion in revenues and \$6.3 billion in profits in 2009.
6. ConocoPhillips	Headquartered in Houston, Texas, ConocoPhillips had \$139.5 billion in revenues and \$4.9 billion in profits in 2009.
7. AT&T	Headquartered in Dallas, Texas, AT&T had \$123.2 billion in revenues and \$12.5 billion in profits in 2009.
8. Ford Motor	Headquartered in Dearborn, Michigan, Ford had \$118.3 billion in revenues and \$2.7 billion in profits in 2009.
9. J.P. Morgan Chase & Co.	Headquartered in New York, NY, J.P. Morgan Chase had \$115.6 billion in revenues and \$11.7 billion in profits in 2009.
10. Hewlett-Packard	Headquartered in Palo Alto, California, HP had \$114.5 billion in revenues and \$7.7 billion in profits in 2009.

Source: Fortune 500 Magazine

Monarchies always dissolve into dictatorship, oligarchies into aristocracy, and rule by the people winds up in mobocracy or anarchy. The Constitution gave people reasonable confidence that these things wouldn't happen here.

settle all of its debts, and then perhaps reconstitute under a different partnership. Now, a corporation could continue even if stockholders or officers died or left, giving the company and its investors a greater degree of stability and security.

OUTLOOK: What was it about the Constitution that made these changes possible?

REW: The Constitution made a credible commitment to protect Americans' life, liberty, and property from foes foreign and domestic. People weren't as afraid of being invaded by a foreign power. Because of the checks and balances in the Constitution they weren't as worried about either the federal government or individual states becoming tyrannical. Monarchies always dissolve into dictatorship, oligarchies into aristocracy, and rule by the people winds up in mobocracy or anarchy. The Constitution gave people reasonable confidence that these things wouldn't happen here.

Second, and just as important, the Constitution gave the government the structure it needed to get its financial house in order. By the middle of 1792 the federal government had its finances down well. It had refunded the national debt, assumed the states' debts and established a quasi-central bank called the Bank of the United States.

OUTLOOK: Why was it so important to have the government on a firm financial footing?

REW: All of these things made people feel more secure, more expansive, and more entrepreneurial. Business people, like everyone else, wanted their liberty and property protected. A government that's not on a firm financial footing can do all sorts of things to limit or diminish the value of private property, such as inflating its way out of debt or even outright confiscation. People feared inflation because they had just suffered a bout of that during the Revolution and seen how damaging it was to the economy and to social relations. And they were afraid of property confiscation because during the war that's exactly what they had done to the loyalists. So they knew governments were capable of these actions, and they knew the government would have a greater incentive to engage in them if it didn't have its finances in order.

We're not talking about the U.S. government seizing assets en masse, or jackboots kicking down the door in the middle of the night and dragging us away. But the larger our debt grows, the more reason we have to be concerned about what sorts of steps the government might take if it becomes truly unmanageable.

OUTLOOK: *Which of the Founders did the most to set us on the right fiscal path?*

REW: Alexander Hamilton did more than any other founder to create a stable financial system in the United States.

OUTLOOK: *You named your son after Alexander Hamilton. How did you get your wife to go along with that?*

REW: I gave up naming rights on the next two children.

OUTLOOK: *You mentioned the Bank of the United States, which Hamilton was behind. What else did he do?*

REW: One of his most important and least appreciated steps was reforming the tariff system on imported goods. People misunderstand what that means. They assume he put in place protective tariffs, which inhibit trade. He didn't. These were tariffs on high quality luxury goods that weren't being made in the United States. Fancy carriages carried a 15 percent tariff, because Hamilton knew people with the money and desire for fancy imported carriages would be able to pay that. He put high tariffs on distilled liquors. If people wanted their French brandy, they would pay for it. He also knew enough to recognize that there were other, less expensive goods that you shouldn't put tariffs on, because doing so would end the trade, or create a black market in illegally imported goods. Tariffs on luxury goods helped give the government the revenue it needed to service the debts it had incurred during the Revolutionary War. They also enabled the federal government to assume the debts of the states, to help alleviate their financial troubles.

OUTLOOK: *What if any parallels are there between that period and our current federal debt and deficit problems?*

REW: Now, as then, it's vital that our government get its financial house in order, which will give us assurance that they won't create a big inflation or engage in confiscation of private assets. To be sure, we're not talking about the U.S. government seizing assets en masse, or jackboots kicking down the door in the middle of the night and dragging us away. But the longer

this goes on and the larger our debt grows, the more reason we have to be concerned about what sorts of steps the government might take if the debt becomes truly unmanageable.

As for the solutions, I'm fairly agnostic at this point. In the short or intermediate term we need to cut expenditures and/or raise taxes to get closer to a balanced budget.

Covering spending over the long-term is key. It's pretty clear that the government shouldn't be getting much bigger than it already is.

OUTLOOK: What were the primary industries of early corporations?

REW: They fell into four general groups: finance, transportation, utilities, and manufacturing. Finance included commercial banking, savings banks, and mortgage banks—which were all discreet entities back then—along with marine, fire and life insurance. Later, other types of insurance were added to the mix. Transportation included toll bridges, toll canals, toll roads, and, later, railroads and freight companies. Utilities were for drinking water, and water for energy. Companies would build dams or use natural waterfalls to produce energy, which they would sell to manufacturers. Other early utilities included gasified coal, used instead of candles to provide light. Manufacturers included textiles, iron and steel, and, later, machines and railroad cars.

OUTLOOK: How did they differ from modern corporations?

REW: As you might expect, they were smaller in terms of capitalization, revenue, and number of employees and shareholders. As you might not expect, they often had much better and more effective governance than corporations do today.

OUTLOOK: How so?

REW: They held elections for directors that were meaningful, where a fairly sizeable percentage of shareholders would show up in person, or, if they couldn't make it, would give their proxy to someone not in management, who would vote for them. They also had much better information disclosure.

OUTLOOK: How can that be, when we now live in an age of instant, 24-hour, online communication?

REW: It comes down to what the company wants to share with its stakeholders. Today, we have the “FD regulation,” for full disclosure, which means if you're going to say anything, you've got to tell the whole world, not just your shareholders. What that means, paradoxically, is that corporations are very reluctant to give out quality information. Early on, disclosure was at the discretion of the corporations. There were no big mandates.

Somehow, we've gotten the idea today that corporations can live forever, or that they have a *right* to live forever. Early corporations were almost always limited by their charters to five, 10, or 30 years, after which they had to go back to the legislature and seek a renewal.

And because corporations were smaller, simpler businesses, they were much easier for investors to monitor. For example, I once found a list of stockholders for an early corporation that built and maintained a toll bridge in Maine. The list had the stockholders' addresses on it. I used old maps to locate where they lived. It was clear from the map that most of the stockholders must have used that bridge on a daily basis. So, if the toll receipts were down, or the toll keeper was sleeping on the job, or there was a physical problem with the bridge, all of the shareholders would have known about it and acted to get the problem fixed.

OUTLOOK: How did the corporate charter process work?

REW: A charter required an act of state legislation. Somehow, we've gotten the idea today that corporations can live forever, or that they have a right to live forever. Early corporations were almost always limited by their charters to five, 10, or 30 years, after which they had to go back to the legislature and seek a renewal. Also, there were legal prohibitions against empire building. Corporations had one clearly defined task. If the executives tried to move into a different line of business, shareholders could seek an injunction. By the mid-19th century, textile mills were getting physically enormous, but they still had to be manufacturers, not finance companies. Commercial banks could get bigger, but they still had to make loans to businesses. They couldn't get involved in mortgage banking. Because of these limits on expansion, corporations paid out most of their earnings as dividends.

OUTLOOK: What about taxes?

REW: Corporations were taxed, but quite a bit more lightly than today. Taxes were all at the state level until the 20th century and the birth of the federal corporate income tax. In the early days, taxes were based mainly on real estate holdings. If you were a farmer or a corporation, and you owned real estate, you paid a tax. In some states, there were taxes on dividends.

Corporations need to improve their governance so that stockholders once again can prevent managers from engaging in activities that are clearly self-serving to the managers.

OUTLOOK: Was there any popular backlash against “corporate America” as we see today?

REW: There were anti-corporate people. They were concerned about two things: First, monopoly. They didn’t mean monopoly as in one company dominating. They’d speak of 15 retailers with a “monopoly.” What they really meant was that they were concerned about a group of companies enjoying too much market power, that prices would rise and the quality and quantity of goods would fall. The other fear was that corporations were going to control the government and politicians, who would pass laws in their own favor. Anti-corporate people would therefore try to keep potential corporations from getting their charters or get safeguards built in to try to limit the corporation’s market power. It was a highly politicized environment.

OUTLOOK: When did the charter system begin to change?

REW: After the mid-19th century, general corporation laws made it possible to just pay a fee and fill out some basic paperwork saying where the company will be formed, what it will be, who the initial investors are, and so forth. That gave corporations the freedom to expand however they wanted, without approval of legislators or even stockholders. This had both positive and negative effects, because even as it enabled some companies to become more dynamic, it coincided with an erosion of corporate governance in the late 19th century into the early 20th century.

OUTLOOK: What could companies do better to return to those days of better governance?

REW: Over the course of a century or so, corporations have gone from being controlled by stockholders to being controlled by executives with very short-term compensation packages, in most instances. Which gives them incentives to pay themselves as much as they can, and give themselves “heads I win, tails you lose” contracts, with golden parachutes. Corporations need to improve their governance so that stockholders once again can prevent managers from engaging in activities that are clearly self-serving to the managers. Early corporations had voting rules where you could put all of your votes in for one candidate instead of spreading them out across the board. All of the directors, except for the president, were outside directors, not employees. They were compensated only by dividends and/or the stock going up. They were, essentially, stockholders rather than employees.

This is a fundamental distinction that somehow got erased and lost. Shareholders had graduated voting rights. Instead of one vote per share, you might get one vote for every share up to five, and then you had to own another ten shares before you got one additional vote, and then still another ten shares for another additional vote. It was a way of giving minority shareholders more representation. The stockholders could at any time essentially take over the management and kick out the executive team and replace them. They didn't have to wait for an election. Or they could just form committees that would investigate the board of directors.

OUTLOOK: Overall, would you say that government regulation of corporations was greater or less in the early days of the United States, compared with today?

REW: To some extent, the government played a heavier role, because they could build restrictions about a corporation's scope and lifespan into the charter. On the other hand, there wasn't the sort of ongoing, detailed regulation of everyday business operations that we have today. The contract between workers and employers was not something the government got involved in. People could work as many hours in the day under whatever conditions they agreed to. By the early 19th century, some banks and insurance companies were being examined, but examiners only came once a year and the companies knew when they were coming. There were no OSHA rules saying someone had to have a lumbar chair for their back, or a certain number of BTUs of heat in their workspace.

OUTLOOK: What's the matter with those regulations?

REW: The problem today is not a specific regulation, but a sense among businesses that government can do whatever it wants, and there's no way to predict what they'll do next, and no clear way to stop it. The most objective measure of this is to look at the federal government's expenditures as a percentage of GDP, which has risen from a little over 1 percent in 1790 to nearly 18 percent in 2000 and more than 25 percent today. We've just had two thousand-plus pages of new regulations on business with the Dodd-Frank bill. Who even knows for sure what's in there? With the health care bill, the federal government is for the first time saying you have to buy health care insurance. All of the understandings we had in the early days of the country about limited government seem to be gone in every way except for rhetoric. That leaves us at the whim of whatever administration happens to be in power. None of this creates a feeling of long-term certainty for business.

We need to establish some firm sense of what this government can do, and what it can't do. It's not even as important where the boundary line is drawn as it is that there is a boundary line, and that it be fairly clear.

OUTLOOK: What's been driving all of this regulation?

REW: Robert Higgs, the libertarian economic historian, describes “the ratchet effect” – how wars, depressions and other upheavals lead to rapid increases in government powers. When the crisis ends, that power recedes somewhat, but never back to the level it was before the crisis. So, over time, you have a steady buildup of regulation and control. The war on terror and the current economic crisis only added to a long list of events that have ratcheted up what the federal government thinks it can do.

OUTLOOK: What's the solution?

REW: The government needs to make a credible commitment to determining just how far it can go. We need to establish some firm sense of what this government can do, and what it can't do. It's not even as important where the boundary line is drawn as it is that there is a boundary line, and that it be fairly clear. To me, that's what we've lost.

As the government has become more and more intrusive, the incentive to make long-term decisions has eroded. Companies want to make money, but don't want to make long-term commitments because they don't know what's going to happen in the next election and what sort of programs will be enacted. So they make short-term investments. In the early days of the country, the term for short-term investment was “speculation,” and it was a dirty word—a way to get a fast buck without adding any value. ■

Interest Rates and Economic Indicators

The interest rate and economic data on this page were updated as of 10/31/11. They are intended to provide rate or cost indications only and are for notional amounts in excess of \$5 million except for forward fixed rates.

KEY ECONOMIC INDICATORS

Gross Domestic Product (GDP) measures the change in total output of the U.S. economy. The Consumer Price Index (CPI) is a measure of consumer inflation. The federal funds rate is the rate charged by banks to one another on overnight funds. The target federal funds rate is set by the Federal Reserve as one of the tools of monetary policy. The interest rate on the 10-year U.S. Treasury Note is considered a reflection of the market's view of longer-term macroeconomic performance; the 2-year projection provides a view of more near-term economic performance.

ECONOMIC AND INTEREST RATE PROJECTIONS

Source: Insight Economics, LLC and Blue Chip Economic Indicators

US Treasury Securities

2011	GDP	CPI	Fed Funds	2-year	10-year
Q3	1.90%	2.50%	0.08%	0.30%	2.40%
Q4	1.90%	1.80%	0.09%	0.30%	2.10%
2012	GDP	CPI	Funds	2-year	10-year
Q1	1.90%	2.00%	0.10%	0.30%	2.10%
Q2	2.20%	1.90%	0.10%	0.30%	2.10%
Q3	2.50%	2.20%	0.13%	0.30%	2.10%

PROJECTIONS OF FUTURE INTEREST RATES

The table below reflects current market expectations about interest rates at given points in the future. Implied forward rates are the most commonly used measure of the outlook for interest rates. The forward rates listed are derived from the current interest rate curve using a mathematical formula to project future interest rate levels.

IMPLIED FORWARD SWAP RATES

Years Forward	3-month LIBOR	1-year Swap	3-year Swap	5-year Swap	7-year Swap	10-year Swap
Today	0.44%	0.54%	0.70%	1.22%	1.72%	2.19%
0.25	0.50%	0.54%	0.76%	1.32%	1.80%	2.23%
0.50	0.58%	0.57%	0.86%	1.45%	1.90%	2.31%
0.75	0.58%	0.57%	0.96%	1.57%	2.02%	2.41%
1.00	0.57%	0.59%	1.06%	1.70%	2.11%	2.46%
1.50	0.58%	0.69%	1.36%	1.94%	2.32%	2.65%
2.00	0.78%	0.93%	1.64%	2.19%	2.51%	2.77%
2.50	1.12%	1.29%	1.98%	2.43%	2.69%	2.91%
3.00	1.45%	1.65%	2.31%	2.68%	2.88%	3.06%
4.00	2.13%	2.39%	2.82%	3.04%	3.16%	3.27%
5.00	2.66%	2.92%	3.16%	3.26%	3.35%	3.40%

HEDGING THE COST OF FUTURE LOANS

A forward fixed rate is a fixed loan rate on a specified balance that can be drawn on or before a predetermined future date. The table below lists the additional cost incurred today to fix a loan at a future date.

FORWARD FIXED RATES

Cost of Forward Funds

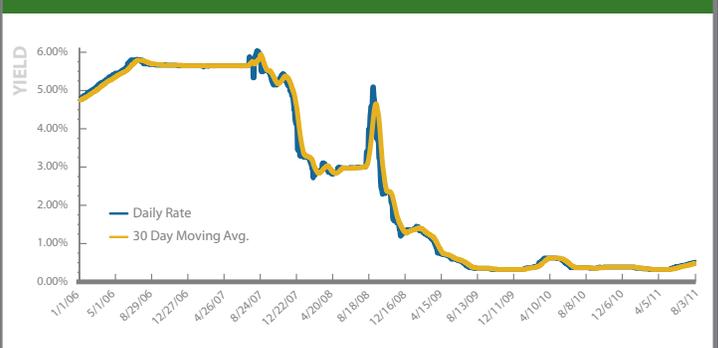
Forward Period (Days)	Average Life of Loan			
	2-yr	3-yr	5-yr	10-yr
30	4	6	6	6
90	7	14	15	14
180	11	26	28	26
365	35	55	57	50

Costs are stated in basis points per year.

SHORT-TERM INTEREST RATES

This graph depicts the recent history of the cost to fund floating rate loans. Three-month LIBOR is the most commonly used index for short-term financing.

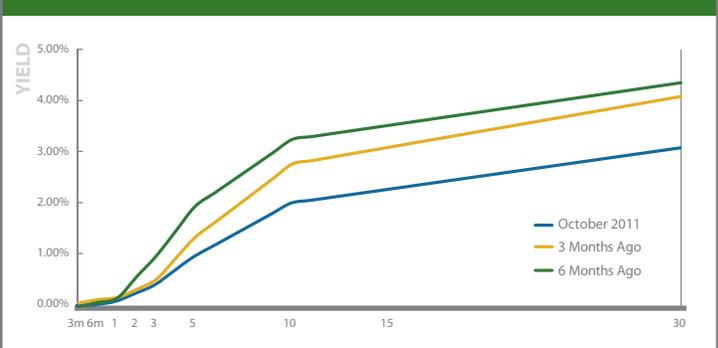
3-MONTH LIBOR



RELATION OF INTEREST RATE TO MATURITY

The yield curve is the relation between the cost of borrowing and the time to maturity of debt for a given borrower in a given currency. Typically, interest rates on long-term securities are higher than rates on short-term securities. Long-term securities generally require a risk premium for inflation uncertainty, for liquidity, and for potential default risk.

TREASURY YIELD CURVE





About CoBank

CoBank is a \$62 billion cooperative bank serving vital industries across rural America. The bank provides loans, leases, export financing and other financial services to agribusinesses and rural power, water and communications providers in all 50 states. CoBank is a member of the Farm Credit System, a nationwide network of banks and retail lending associations chartered to support the borrowing needs of U.S. agriculture and the nation's rural economy. In addition to serving its direct retail borrowers, the bank also provides wholesale loans and other financial services to affiliated Farm Credit associations and other partners across the country. Headquartered outside Denver, Colorado, CoBank serves customers from regional banking centers across the U.S. and also maintains an international representative office in Singapore. For more information about CoBank, visit the bank's web site at www.cobank.com.

Commentary in Outlook is for general information only and does not necessarily reflect the opinion of CoBank. The information was obtained from sources that CoBank believes to be reliable but is not intended to provide specific advice.

CoBank Reports Third Quarter Financial Results

Net Income Increases 29 Percent to \$169.9 Million

CoBank, a leading cooperative bank serving agribusinesses and rural infrastructure providers throughout the United States, this month announced financial results for the third quarter of 2011.

Quarterly net income rose 29 percent to \$169.9 million, compared with \$132.0 million in the third quarter of 2010. Net interest income for the quarter was \$252.0 million, compared with \$226.3 million a year ago. Average loan volume for the third quarter was \$47.6 billion, compared to \$44.5 billion for the same period in 2010.

For the first nine months of 2011, net income increased 25 percent to \$562.7 million, compared to \$451.0 million during the same period in 2010. Net interest income increased 23 percent to \$829.7 million, from \$674.9 million in the prior-year period. Total loan volume for the bank at September 30, 2011 was \$45.0 billion.

Growth in the bank's agribusiness portfolio was the primary driver of stronger financial performance during the quarter, as has been the case throughout the year. During most of 2011, prices for corn, wheat, soybeans and other agricultural commodities have been higher than they were in 2010, leading to increased borrowing from cooperatives that finance their inventories and receivables. At the same time, loan growth with rural infrastructure customers and Farm Credit associations has been modest, consistent with slow growth in the broader U.S. economy.

"CoBank has experienced strong financial performance throughout this year," said Robert B. Engel, the bank's president and chief executive officer. "While we're pleased with our strong results, we also recognize that loan demand from agribusiness customers as a result of the sustained increase in commodity prices may moderate or even decline in the event of a commodity market slowdown. As always, our focus remains on managing the bank for the long term, and on meeting the needs of all our customers in economic conditions that should remain volatile and challenging for the foreseeable future."

At quarter end, 1.46 percent of the bank's loans were classified as adverse assets, compared with 1.87 percent at June 30, 2011, and 1.71 percent at December 31, 2010. Nonaccrual loans decreased to \$160.7 million, from \$191.3 million at the end of the second quarter and \$167.0 million at the end of the prior year. During the third quarter, the bank recorded a \$12.5 million provision for loan losses, bringing the year-to-date provision to \$50.0 million. The provision for loan losses in the first nine months of last year was \$37.5 million. The bank's reserve for credit exposure totaled \$533.4 million at September 30, 2011, or 1.99 percent of non-guaranteed loans outstanding when loans to Farm Credit associations are excluded.

“Credit risk in CoBank’s loan portfolio has been generally stable throughout 2011 and remains well within the bank’s risk-bearing capacity,” said David P. Burlage, CoBank’s chief financial officer. Capital levels at the bank are significantly above regulatory minimums. As of September 30, 2011, shareholders’ equity totaled \$4.9 billion, and the bank’s permanent capital ratio was 15.7 percent, compared with the 7.0 percent minimum established by the Farm Credit Administration (FCA), the bank’s independent regulator.

At quarter end, CoBank held approximately \$16.0 billion in cash and investments. The bank averaged 190 days of liquidity during the first nine months of the year, compared with the 90-day regulatory minimum set by the FCA. “As a member of the Farm Credit System, CoBank continues to enjoy strong access to the debt funding markets,” Burlage said. “The System’s cooperative ownership structure and steady financial performance throughout the economic downturn of the past few years have been important factors in maintaining investor confidence in System debt securities. Nonetheless, we have adopted a conservative position with regard to liquidity in order to ensure we can meet the borrowing needs of our customers in the event of a broader credit market disruption.”

CoBank recorded \$2.0 million in impairment losses on investment securities during the third quarter, primarily due to continued weakness in the U.S. housing market and broader economy, and the related impact on certain mortgage- and asset-backed securities held by the bank. Through the first nine months of 2011, impairment losses have totaled \$6.0 million, compared with \$39.0 million during the same period last year. Credit risk in CoBank’s investment portfolio is limited by the fact that approximately 97 percent of the bank’s securities carry an implied or explicit guarantee from the U.S. government. ■