Will Energy Markets Refuel the Rural Economy?

By Jason Henderson and Maria Akers

The rural economy began 2006 facing an uncertain outlook. For two years, rural growth had been unusually strong. But rising energy prices threatened to stall the expansion. Many businesses had already been weakened by high input costs, and many households were feeling squeezed by higher costs for gas and heating fuel. As the year progressed, however, some rural communities were able to harness the power of high energy prices by taking part in its production.

Energy activity helped boost the fortunes of many rural places, but the rural economy as a whole slowed in 2006. Nonfarm economic growth moderated as production costs increased and construction activity cooled. Farm incomes also declined as severe drought limited production and higher energy prices cut profits. Still, rising crop prices fueled by ethanol production kindled optimism for new economic engines in rural America.

This article reviews the state of the rural economy in 2006 and discusses its prospects for the year ahead. The first section discusses the slower, but steadier, expansion on Main Streets. The second section

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examines the health of the farm economy. The third section explores rural prospects for 2007 and discusses the influences of robust energy activity on the rural economy.

I. A SOLID, BUT SLOWER, MAIN STREET EXPANSION

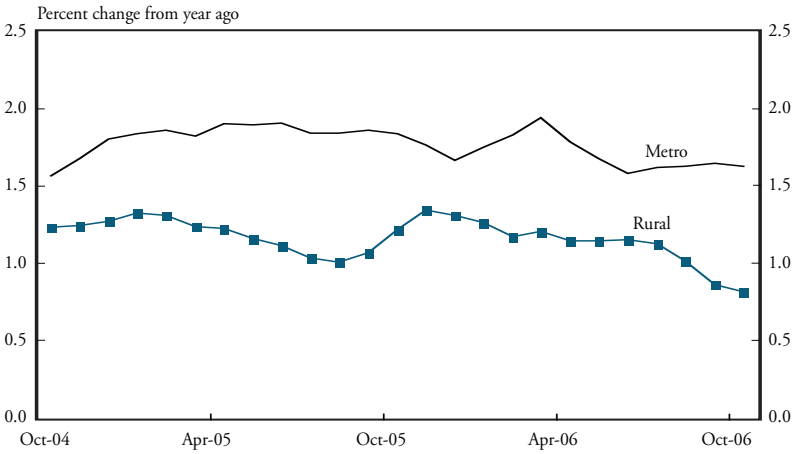
The rural nonfarm economy made solid, but slower, gains in 2006—much like the national economy. Main Street activity was buoyed by strong activity in energy and high-skilled services.[1] Even with slower overall job growth, rural labor markets remained tight, and growth in rural incomes was solid. Rural areas continued to trail metro areas in overall growth and economic gains remained unevenly distributed across rural America.

Main Street businesses added jobs at a solid, but slightly slower pace in 2006. Rural job growth slid throughout the year and dipped to 0.8 percent above year-ago levels by October (Chart 1). Job growth slowed more dramatically in the third quarter, coinciding with weaker economic activity at the national level.[2] Rural households also reported slower employment growth during the year.[3]

The slower, but still solid pace of job growth left rural labor markets in an extremely tight condition and spurred a rise in rural incomes. Solid job gains continued to push rural unemployment rates lower. The rural unemployment rate fell to 4.5 percent, the lowest level in six years.[4] Rural businesses continued to report challenges finding workers, especially for high-skilled positions. But the tight labor markets underpinned strong wage gains. Average weekly earnings for 2006 rose roughly 5 percent above year-ago levels and outpaced metro gains.[5]

Most sectors of the rural economy reported signs of easing activity. Both service-producing and goods-producing industries suffered slower job growth in 2006. Expansion in services gradually slowed on Main Street but still drove overall rural job gains. Financial services showed the most resilience, with solid contributions from education and healthcare, wholesale trade, and professional and business services. Weakness in the retail sector spilled over into transportation and warehousing, combining for some job losses. Rural communities benefited from the addition of government jobs in the first half of the year, but the expansion of government employment came to a halt in the third quarter.

Chart 1
RURAL AND METRO JOB GROWTH



Payroll survey data, seasonally adjusted, three-month moving average

Source: Bureau of Labor Statistics

Despite the slower job growth, businesses reported difficulties finding high-skilled service workers, ranging from computer programmers to mid-level managers.

Goods-producing sectors also experienced a slower pace of job growth. Job growth slowed even with robust activity in the energy sector as the housing slowdown and stable factory payrolls failed to produce rapid job growth. The strongest job growth for 2006 was in energy and mining. Employment growth in mining jumped 6.2 percent during the year. Energy companies reported several challenges in finding rig workers and indicated that poaching workers from other companies was the main way companies were trying to fill job openings. Rural communities, with large concentrations of energy-related activity, continued to thrive and were somewhat insulated from market conditions affecting the national economy. Domestic production of oil, coal, and natural gas, often located in rural areas, proved strong in 2006. The stimulus from energy spread into other corners of rural America, as the surge in ethanol demand led to new investments and jobs in many rural communities.

In contrast to robust energy activity, weaker construction activity was a drag on the rural economy. Indicators for the nation's housing market deteriorated in 2006 amid concerns of market saturation, over appreciation of

home values, and risks associated with creative financing options. Both metro and rural areas felt the impact of declining building permits as the construction sector cooled. The decline in rural permits during the past year, however, was not as steep as in metro areas, 8.5 percent versus 12.6 percent, respectively. Yet, with almost one-third of rural goods-producing jobs in construction, shifts in the housing market did have a pronounced effect on rural economies. Cutbacks in rural construction jobs, however, appeared to level off recently and may be a sign that the housing market is beginning to stabilize. Another positive sign is that despite the declining volume of building permits in 2006, the average value of rural building permits rose to a historical high.

Manufacturing activity was mixed in 2006. Similar to national trends, rural manufacturing appeared to enjoy productivity and sales gains. Still, increased activity did not translate into job gains. Productivity growth allowed rural businesses to expand sales without adding workers. As with service and energy firms, though, business contacts reported a shortage of skilled labor, so some specialized positions remained unfilled. Due to tight labor markets, growth in average weekly earnings for manufacturing jobs increased in 2006 as firms sought to retain their workers. The number of rural plant closures and mass layoffs in manufacturing remained stable. Even with rising payrolls and higher energy costs, manufacturing income remained strong and benefited from productivity improvements, achieved by more efficient labor and capital investments.

Economic growth, however, was not evenly distributed across rural America. Job gains continued to be strongest in more densely populated rural communities that serve as regional economic centers. Some micropolitan regions—for example, Cordele, Georgia, and Kearney, Nebraska—continued to pace national job growth. Rural economies with large concentrations of energy activity posted the strongest growth, with employment growth rising 3 percent above year-ago levels. Service- and government-based rural economies also posted strong employment gains. Continuing the trend of recent years, employment growth was strong in highly scenic rural communities that serve as recreation or retirement destinations.[6]

II. THE FARM BOOM EASES BUT LEAVES A HEALTHY FARM ECONOMY

As with Main streets, the robust activity at the farm gate eased in 2006. After two record-breaking years, the farm sector remains healthy despite lower incomes. Farm incomes dropped to more historical levels, settling at $58.9 billion in 2006, slightly above the 10-year average, but 20 percent below 2005. Rising production costs limited income gains in both livestock and crop sectors. While farm balance sheets and financial conditions eased, they remain healthy. The farm sector ended the year on a more optimistic note as crop prices spiked with a surge in ethanol production.

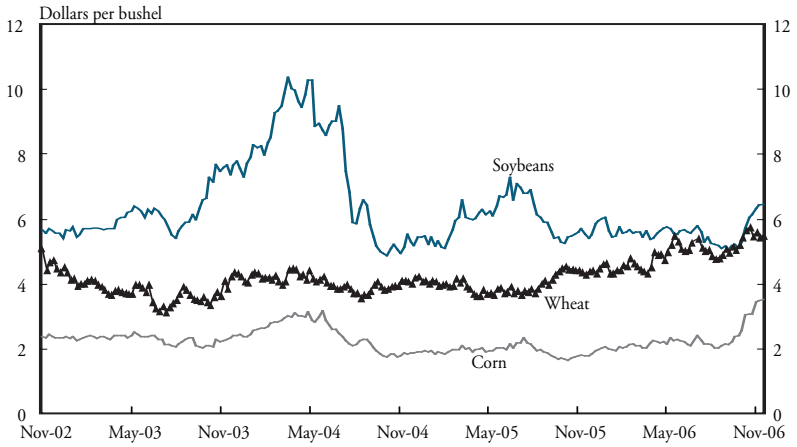
Drought and higher energy costs lead to mixed crop markets

Drought led to a mixed harvest in U.S. crop markets. Spring drought devastated the U.S. wheat crop, while timely rains led to bumper corn and soybean crops. Demand remained strong in 2006 and underpinned crop prices that soared in the fourth quarter with increased ethanol demand. The surge in crop prices trimmed government payments in 2006. Despite strong revenues, high energy prices led to a rise in production costs and trimmed net incomes.

U.S. crop production was mixed in 2006 as persistent drought in the Great Plains cut production in some crop sectors. The severe drought in the southern Plains led to a sharp decline in wheat production. Wheat production in Oklahoma and Texas was less than half normal levels. Wheat yields fell sharply, and some fields were abandoned at harvest because of the lack of production. In contrast, the U.S. produced a record soybean crop and another bumper corn crop as the eastern Corn Belt received ample and timely rains during the year.

Crop demand strengthened in 2006 with a surge in ethanol production and solid export demand. The rapid expansion in ethanol fueled strong domestic corn demand. Ethanol-based corn use jumped 34 percent as more than 2 billion bushels of the 2006 corn crop are expected to be used in fuel production. Export demand also remained strong as corn exports edged up, despite strong domestic demand.

Chart 2
U.S. CROP PRICES



Source: *The Wall Street Journal*

Record production led to a rebound in soybean exports that strengthened as the year progressed. While a short wheat crop limited total exports, exports accounted for a slightly larger share of U.S. wheat use than in 2005.

Strong demand, especially domestic ethanol demand, led to a spike in U.S. crop prices as 2006 came to a close (Chart 2). To be sure, crop prices remained firm throughout most of the year as corn and wheat prices remained above 2005 levels. Crop prices moved against the seasonal trend and rose sharply during the fall harvest. Corn prices jumped 70 percent during the harvest and the momentum spilled into the soybean and wheat markets. As a result, gross corn cash receipts are expected to jump 21 percent, with more modest gains in wheat cash receipts. Soybean cash receipts are expected to edge down in 2006.

Higher crop prices will lead to lower farm subsidy payments for the year. Government farm payments spiked in 2005 as Hurricanes Katrina and Rita closed the New Orleans port and sent crop prices plummeting in the Mississippi River Valley. The result was a sharp increase in countercyclical and loan deficiency payments, programs which provide government payments to support farm incomes when crop prices fall. In contrast, the sharp rise in crop prices in 2006 trimmed these payments to $16.5 billion, down from $24.3 billion in 2005.[7]

While gross crop revenues rose solidly in 2006, higher production costs cut net incomes, especially in regions facing another year of severe drought. On average, crop production costs rose roughly 6 percent above 2005 levels. Fertilizer, pesticide, and seed costs continued to rise. Energy costs associated with fuel and electricity also advanced sharply, although declining fuel costs in the fourth quarter eased some of the pressures for farmers. Corn, rice, cotton, and wheat producers faced the largest gains in production costs, as fuel and fertilizer account for 40 percent to 50 percent of operating costs.[8]

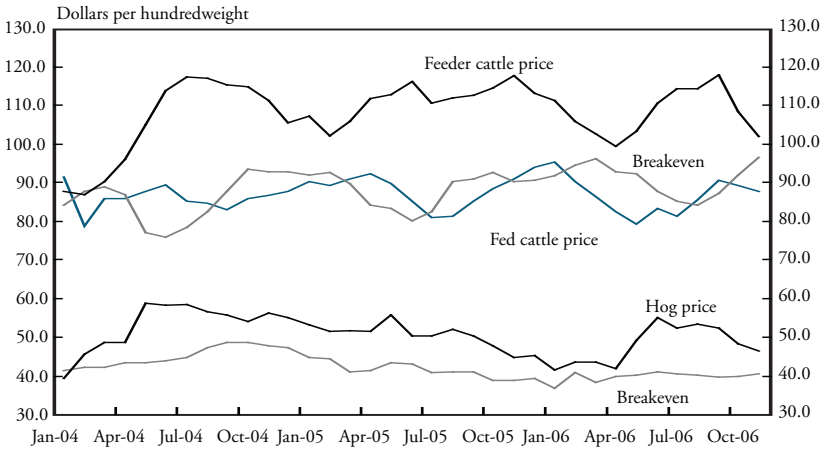
While all crop producers faced higher production costs, profitability in the crop sector was mixed, due mainly to drought. Regions with a normal to near normal harvest were able to sell their crops at higher prices. However, regions that faced severe drought were unable to reap larger revenues from elevated crop prices because they simply did not have a crop to sell. As a result, many regions with normal to near normal harvests experienced an increase in income at year's end, while other regions facing drought experienced substantial declines in farm income. For example, net farm incomes were expected to improve in the eastern Corn Belt, where producers received ample and timely rain, while net farm incomes were expected to fall in the Great Plains, where producers faced severe drought.[9]

Rising production costs trim livestock profits

Profit margins also fell for most livestock producers as forage and feed costs swelled amid drought and an ethanol expansion. A stronger expansion in livestock production more than met solid protein demand. As a result, most livestock prices and revenues dipped below record highs posted in recent years.

In 2006, the livestock sector faced severe drought conditions that led to higher feed and forage costs and herd liquidations in the cattle sector. At the beginning of the year, drought conditions were concentrated in the southern Plains, but as the year progressed, the drought intensified and spread throughout the Great Plains. By the end of July, half of the contiguous United States was facing some stage of drought. Deteriorating pasture conditions increased the demand for forage and underpinned a rise in the price of hay and alfalfa. Shortages of pasture and water led to herd liquidations for some ranchers and higher than

Chart 3
U.S. LIVESTOCK PRICES



Note: Fed cattle are Great Plains Cattle feedlot. Hogs are N. Central Hog Farrow to Finish. Feeder cattle are Oklahoma City steer prices 750 to 800 lbs.

Sources: USDA, *Livestock, Dairy, and Poultry Outlook*

normal placement of cattle in feedlots. For example, the number of cattle placed on feed between November 2005 and March 2006 in Oklahoma was 20 percent higher than the previous year.

Higher crop prices also trimmed profits in the livestock sector. Costs for hog producers and cattle feedlot operators rose with rising corn prices (Chart 3). Some of the increased costs were driven by interest expenses, but feed expenses were by far the largest cost increase. For example, USDA indicates that feed costs for High Plains feedlots rose 40 percent in the year ending in October 2006.[10]

Even with higher feed and forage costs, the expansion in livestock production strengthened in 2006. Total red meat and poultry production rose 2.6 percent during the year, led by stronger increases in beef production.[11] The number of cattle slaughtered rose 4.6 percent, with the largest increase emerging in the slaughter of beef cows, as drought conditions led ranchers to liquidate herds and limit herd expansions. Pork and poultry sectors posted more modest gains. In the pork sector, strong growth in sow slaughter indicates that producers are limiting expansions in breeding stock. The dairy industry also experienced stronger production growth, especially during the first half of the year.

With increased production, rising demand was unable to spur large gains in livestock prices and revenues. Cattle prices remained relatively high in 2006. Beef exports continued to rebound with the opening of the Japanese market to U.S. beef and strong sales to Canada and Mexico. However, cattle feeders struggled to produce a profit, as relatively high feeder cattle prices and higher feed costs raised the cost of production. In the pork sector, easing domestic pork consumption placed downward pressure on hog prices and trimmed profit margins. Yet another year of solid pork export growth kept hog prices above breakeven levels. Poultry and dairy sectors experienced big price declines. Bird flu concerns led to a decline in chicken demand in foreign countries and a decline in U.S. broiler exports. While domestic consumption increased, it was not enough to keep broiler prices from falling 10 percent in 2006. The dairy sector faced the biggest decline, as strong production growth led to a 15 percent drop in milk prices and a $3.4 billion drop in gross cash receipts.

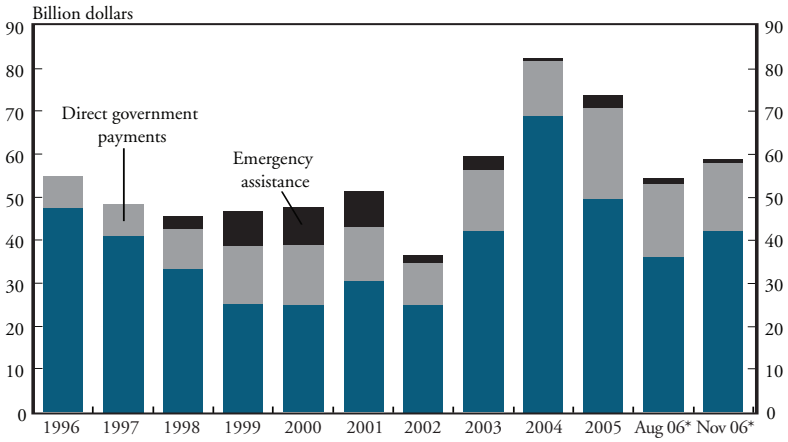
Farm finances healthy despite rising costs

Higher production costs and drought led to a substantial decline in U.S. net farm income in 2006. Despite tumbling from year-ago levels, net farm income remained slightly above average historically. Lower farm income and slower economic growth led to slower farmland price appreciation. With continued appreciation in farmland values, farm balance sheets remained solid, and farm financial conditions remained healthy, with some signs of weakness in drought areas.

Net farm income fell to more historical levels as energy markets contributed to higher production costs. Net farm income fell to $59 billion in 2006, dropping 20 percent below 2005 levels and just slightly above the 10-year average (Chart 4). The decline in net farm income was driven by increased production costs, mainly derived from higher energy costs. Gross farm revenue remained historically high as farm production increased and prices remained relatively strong. However, farm production costs rose 5.4 percent in 2006. Energy and fuel costs were 8 percent higher and added $1.1 billion to production costs. Energy costs also led to substantially higher fertilizer and pesticide prices, adding another $1.4 billion to production expenses. Higher interest charges also increased costs by $1.3 billion.

Chart 4

U.S. NET FARM INCOME



*Forecast

Source: USDA

Drought regions faced the toughest challenge in 2006. Crop losses left many producers incapable of enjoying higher crop prices. USDA's estimate of net farm income fell by roughly $2 billion between February and August, due in large part to drought impacts. While crop insurance receipts will help offset some of the lost income, farmers in drought regions appeared to experience more financial stress. Anecdotal reports indicated that loan extensions and renewals were higher in drought areas.

Lower farm incomes contributed to lower capital spending by farmers. Farm capital spending indexes fell in all of the agricultural credit surveys conducted by Federal Reserve banks. The biggest declines emerged in the Tenth Federal Reserve District, where drought conditions were more severe.[12] These indexes reflected the slower sales of agricultural equipment and machinery. For example, the Association of Equipment Manufacturers reports that combine sales dropped 9 percent below year-ago levels in 2006, with tractors sales down 4.4 percent after sharp gains the past two years.

Another outcome of lower incomes was slower farmland price appreciation in 2006. To be sure, much of the farmland price appreciation in recent years was a result of strong nonfarm demand. Strong demand for recreation, investment, and residential use has supported a

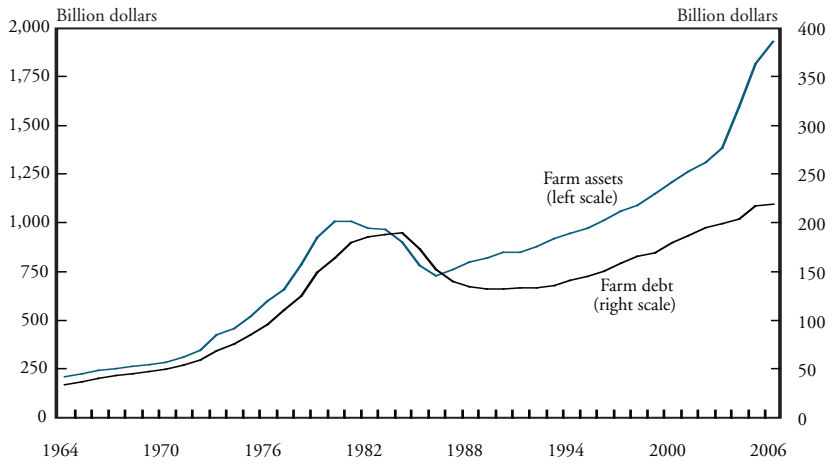
surge in farmland prices since 2004, with many regions posting record gains. Still, record farm incomes in 2005 and 2006 did contribute to the rapid price appreciation in recent years.

At the same time, farmland value gains have slowed. For example, in the Tenth Federal Reserve District, gains in nonirrigated farmland values slowed from 9.2 percent in the fourth quarter of 2005 to 5.3 percent in the third quarter of 2006. Land value surveys from other Federal Reserve Banks revealed slower price appreciation in their regions as well. Reports from bankers indicated that slower nonfarm demand, associated with a weaker housing market, contributed to lower land price appreciation in 2006. A stronger stock market led to softer demand for farmland as an investment opportunity. Nevertheless, recreational demand for land remains strong.

Price appreciation has been slowest for irrigated farmland and for land in regions facing extreme drought. Since 2003, irrigated cropland values have risen more slowly than nonirrigated land values. Lower conversion rates to nonfarm uses, higher fuels costs associated with irrigated crop production, and the concentration of irrigated land in regions facing severe drought are some of the factors limiting gains in irrigated land value. Easing demand for residential development slowed gains in nonirrigated land values. In the Tenth Federal Reserve District, irrigated cropland values were 5 percent above year-ago levels in the third quarter, compared to 5.3 percent and 6.9 percent for nonirrigated cropland and ranchland, respectively. Regions continuing to face severe to extreme drought had substantially slower price appreciation. A glaring example comes from the Front Range of Colorado, where nonirrigated cropland values rose a meager 1.6 percent above year-ago levels after another year of severe drought.

Farmland price appreciation has remained more resilient in regions with substantial energy production. In many energy producing regions, robust energy activity underpinned strong economic growth and solid housing activity. High fuel prices also led to increased revenues to owners of mineral rights, which has helped support farmland prices in energy producing regions. Ethanol production is also underpinning solid land value appreciation. Crop prices around many ethanol plants have increased more than the national average and have reduced the

Chart 5
U.S. FARM ASSETS AND DEBT



Source: USDA

basis in many regions.[13] Anecdotal reports indicate that the surge in crop prices due to strong ethanol demand will lead to a rise in cash rents, which will ultimately be capitalized into farmland values.

Farm balance sheets remained solid, as gains in farmland values boosted farm assets, more than offsetting the rise in farm debt. Farm assets rose 6.3 percent in 2006, led by strong increases in farm real estate (Chart 5). These asset gains offset rising debt levels and pushed the farm debt-to-asset ratio to another record low in 2006. While farm real estate debt increased 3.4 percent in 2006, farm non-real-estate debt actually dropped in 2006.[14]

Overall, farm financial conditions remained healthy in 2006. With lower farm incomes, loan repayment rates eased and loan extension and renewals edged up across the nation (*Agricultural Finance Databook*). After dropping with record farm incomes in 2004 and 2005, the farm debt capacity utilization ratio jumped in 2006 to the levels posted prior to the recent farm boom.[15] Yet farm financial conditions were resilient. Farm delinquency rates remained near historical lows. Outside of areas experiencing sustained drought, most agricultural lenders did not indicate serious concerns about farm finances.

III. WILL THE RURAL EXPANSION CONTINUE?

Heading into 2007, the rural economy appears poised to enjoy another year of solid economic growth. If the national economy grows as private sector forecasters predict, rural Main streets could have some opportunities for prosperity, although the opportunities may not be evenly distributed. Given the historically high farm commodity prices at the end of the year, the farm sector could reap a profitable harvest in 2007. However, energy markets will again be key. Higher energy prices have brought new investments, added jobs, and boosted incomes but also raised the costs of production and economic risks on Main Street and at the farm gate.

Will Main Street growth be sustained?

Main Street activity should remain solid in the year ahead. Despite slowing for most of 2006, rural income and job growth entered this year posting solid gains. Continued strength in the national economy should underpin future rural growth.

The national economy is expected to remain firm, according to various private sector analysts. The housing downturn was a drag on the economy in 2006, but its effects are expected to fade in the year ahead. As a result, private sector analysts predict a gradual firming in the economy and some forecast a potential return to trend growth during the second half of 2007.[16] Overall inflation expectations remain contained. Still, it is anticipated that unemployment levels will edge up from the low levels experienced last year.

Economic growth could again be broad-based as both manufacturers and nonmanufacturers are expected to produce solid growth. According to an *Institute of Supply Management* survey of purchasing managers, revenues in both manufacturing and nonmanufacturing sectors are expected to rise and fuel additional job gains, with slightly stronger growth in nonmanufacturing industries.[17] Both manufacturing and nonmanufacturing industries report relatively high operating rates and a desire to expand production capacity, primarily through new plants and equipment and more hours with existing personnel.

Rural growth should continue to be fueled by the momentum of national economic growth. Goods-producing job growth stabilized toward the end of 2006. While productivity gains may limit manufacturing job growth, factory activity should remain steady. Relatively high energy prices should continue to support robust activity at rural mining and mineral extraction firms. In service sectors, high-skilled industries are expected to underpin continued rural business job gains. Producer and business service firms that employ a large share of skilled workers continued to lead rural job growth heading into 2007. It appears that "homeshoring," outsourcing jobs to rural America instead of overseas, continues to expand. Larger rural communities and those near metro areas with abundant infrastructure appear to be favored locations.

Yet a primary challenge for the rural economy is the uneven distribution of economic growth. While some rural communities reaped new sources of economic opportunity in 2006, others continue to struggle to find new economic engines. Continuing the historical trend, micropolitan regions, counties with larger rural towns, continued to post stronger growth than more sparsely populated rural places (Henderson and Weiler). Heading into 2007, rural energy producing regions continued to enjoy stronger economic growth than other regions, while regions facing continued drought faced sluggish economic growth.

Will higher crop prices underpin a bountiful harvest?

With relatively high prices, farm incomes are likely to remain above historical standards in 2007. Strong crop prices may boost crop revenues but lead to lower government payments. Livestock revenues might ease as increased production is expected to lead to lower prices. Precipitation and drought conditions will be key to farm income prospects..

Crop revenues may strengthen in 2007. Strong demand led to a surge in crop prices at the end of 2006. Futures prices indicate continued strength in agricultural commodity markets through 2007. In December, USDA forecasts that corn and soybean prices are expected to remain well above 2006 levels in the year ahead (Table 1). Anecdotal reports indicate that strong revenues could continue into 2008, as some farmers have used the recent rise in futures markets to guarantee high prices for the 2007-08 crop. Wheat prices are expected to remain high,

Table 1
USDA ANNUAL PRICE PROJECTIONS

Livestock	2007	2006	Average 2001 to 2005
		Dollars per hundredweight	
Choice steers	82-88	85.76	79.29
Feeder steers	99-105	109.76	94.76
Hogs (barrows and gilts)	40-43	47.23	44.55
Broilers	63-68	63.90	64.32
Milk	13.4-14.3	12.85	14.17

Crop Prices	2006/07	2005/06	Average 2001 to 2005
		Dollar per bushel	
Corn	2.90-3.30	2.00	2.15
Wheat	4.15-4.45	3.42	3.31
Soybeans	5.70-6.50	5.66	5.73

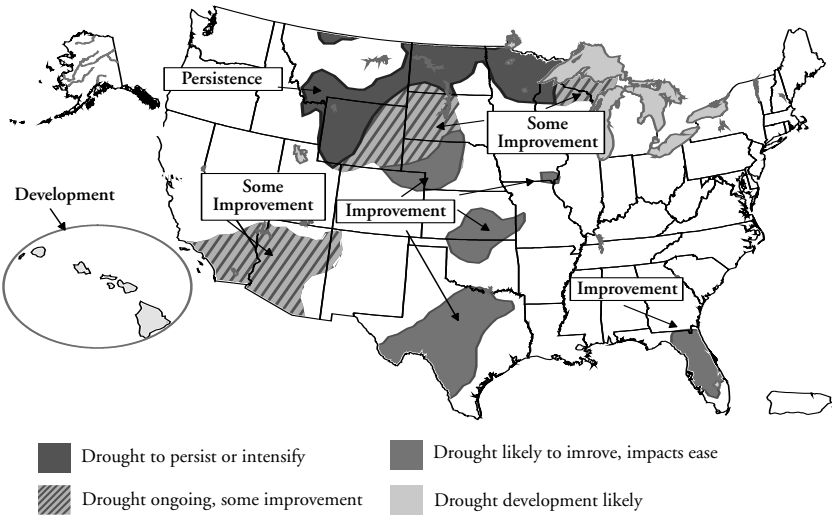
Sources: *Livestock, Dairy, and Poultry Outlook* report and World Agricultural Supply and Demand Estimates, USDA December 2006

but drought will determine if farmers are able to produce a crop to sell at these elevated prices. Revenue gains associated with higher prices will be partly offset by lower government payments. However, if 2006 is any indication, higher prices could result in a net increase in farm income. For example, the USDA net farm income forecast was raised 8.3 percent from August 2006 to November 2006 after the harvest rise in crop prices.

Livestock revenues might not be as strong as crop revenues in 2007 because higher production is expected to place downward pressure on livestock prices, with the higher costs trimming profits. Total red meat and poultry production is expected to rise 2.4 percent in 2007, down slightly from the growth posted the previous year. In the pork sector, production growth is expected to accelerate and lead to lower hog prices. Beef production is expected to expand, albeit at a slower pace.[18] As a result, cattle prices are expected to hold steady or dip slightly below 2006 levels. Broiler prices are expected to hold steady as producers limit production gains. With larger production and lower prices, livestock profits will be squeezed as production costs, especially feed costs, are expected to rise. Cattle prices are expected to remain well below

Map 1

U.S. SEASONAL DROUGHT OUTLOOK THROUGH APRIL 2007



Source: National Weather Service, climate prediction center
Note: Released January 18, 2007

breakeven levels during the first quarter of the year.[19] For hog producers, profit margins are expected to be squeezed as feed costs rise with higher corn prices.

Precipitation in 2007 will again be crucial to the farm sector. Many producers in the Great Plains regions are experiencing their fifth to seventh consecutive year of drought. Easing drought conditions will be needed to boost crop production and allow an expansion in the cattle industry. Weather forecasts indicate that drought impacts are expected to ease throughout much of the Great Plains (Map 1). However, drought conditions are expected to persist in the upper Plains.

Agricultural and trade policy will headline the 2007 agricultural sector. World trade negotiations were volatile in 2006. The on-again, off-again discussions led to a standstill, with agricultural policy a key variable. The core issue is whether countries will trade lower agricultural subsidies for fewer tariffs on manufactured products and increased protection of intellectual property rights. Uncertainty over WTO negotiations has led to some questions regarding agricultural policy. A new farm bill will be needed after 2007. However, there appear to be more fault lines within the agricultural alliance. Some

agricultural constituencies propose extending the current farm bill to wait for the conclusion of trade negotiations, while others do not. Issues such as a cap on farm payments also highlight the regional divisions emerging in agricultural policy. A renewed emphasis on energy, rural development, and conservation programs could also emerge in the policy debate.

Will high energy prices fuel rural prosperity in 2007?

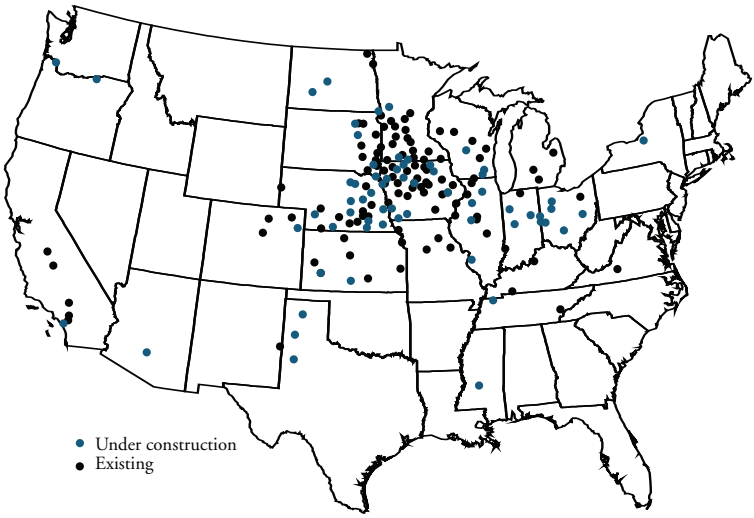
High energy prices have presented the rural economy with a mixed bag of economic impacts. The sharp rise in oil and natural gas prices have led to higher costs in both the farm and nonfarm sectors of the rural economy. Rising prices also led to a surge in renewable energy production and a spike in profitability. Going forward, uncertainty remains regarding the sustainability of corn-based ethanol production.

The influence of higher energy prices on rural economies starts with the impact on production and household costs. High and volatile energy prices clearly raised the costs for rural businesses and households. As previously stated, rising oil and natural gas prices boosted farm production costs last year. Research indicates that higher energy costs have a disproportionately larger impact on rural households than urban households (Shoemaker, McGranahan, and McBride). Gasoline prices will play a major role in the differing impacts as rural workers are more dependent on automobile transportation to commute to work, and they tend to travel longer distances than their urban counterparts.

The surge in gasoline and other energy prices has opened up a new set of economic opportunities for rural communities in renewable fuels. Renewable fuels production—ethanol, biodiesel, wind energy—jumped in 2006, with much of the increase arising from new energy investments located in rural communities. Ethanol production is on pace to expand 20 percent in 2006, and production capacity could expand another 42 percent once the plants currently under construction become fully operational (Map 2).[20] After tripling in 2005, biodiesel production accelerated again in 2006 and is expected to double in 2007, with the completion of current plant expansions.[21]

Crop producers have long supported ethanol production because of its potential to boost crop prices. In 2006, potential became reality as the rapid expansion of ethanol production fueled robust corn demand and a spike in crop prices during the fall harvest season when prices typically

Map 2
U.S. ETHANOL PLANTS AS OF DECEMBER 2006



Source: Renewable Fuels Association

decline. The upward momentum in the corn market spilled over into the soybean and wheat markets, sending both cash and futures market prices soaring. Higher crop prices boosted farm incomes and the optimism of many in the farm sector.

Rising crop prices, however, do have some side effects. First, higher crop prices lead to higher feed costs and lower profit margins for many livestock operations. Cattle feeders are partly immune to this impact as dried distilled grains (DDGs), a by-product of ethanol production, partly substitute for corn in cattle feed. However, DDGs are not readily incorporated into hog and poultry feed, leaving pork and poultry producers to pay higher costs for corn-based feeds. Second, increased profitability brought by higher crop prices will translate into higher cash rents and ultimately be capitalized into land values. Higher cash rents and land values will boost the cost of production not only for corn, but also for other crops, such as soybeans. Third, higher corn prices trim ethanol profits and could lead to actual losses if crude oil and ethanol prices retreat (Novack and Henderson). Moreover, as corn prices surge, the incentive to find other feedstock for ethanol production increases.

Other factors have also raised issues regarding the long-run sustainability of corn-based ethanol production. First, a driving force behind the recent ethanol expansion was a new Renewable Fuels Standard in the Energy Policy Act of 2005, which mandated the use of at least 4 billion gallons of renewable fuels by 2006 and 7.5 billion gallons by 2012. Based on December 2006 estimates, ethanol production alone could reach over 10 billion gallons when current plant expansions and constructions are completed, which will more than fulfill the mandated policy-driven demand for renewable fuels. Second, transportation issues continue to be a common challenge for ethanol producers. Third, foreign competition in the ethanol industry is intensifying. Brazil has a large and expanding ethanol industry with lower production costs due to its use of sugar cane as the primary input for ethanol production. Finally, technology could significantly change ethanol production practices. New technology appears to be fortifying the future of ethanol profitability by enhancing the efficiency of ethanol production through the design of new yeasts and enzymes. However, new technologies are also emerging that challenge the future of corn-based ethanol. For example, ethanol production from cellulosic biomass, ranging from waste paper and wood to switchgrass, has garnered much research and media attention. The first commercial cellulosic ethanol plant is now under construction.

In sum, the rural economy appears to be heading into another stage of the economic cycle. Similar to the nation as a whole, growth has slowed on many Main streets. After two years of record incomes, the farm boom appears to be over. Together, robust growth on Main Street and at the farm gate the past few years has helped solidify many rural economies. The rural economy weathered several crosswinds emerging from energy markets in 2006. Higher energy costs substantially raised the costs of production in rural America, but they also brought a wave of new investment and economic opportunity. Heading into 2007, many wonder if energy markets will help kindle or douse the fire of prosperity emerging in the various corners of rural America.

ENDNOTES

[1]In this article, rural areas are equivalent to nonmetropolitan areas.

[2]Calculations based on Bureau of Labor Statistics state and metro payroll data.

[3]Job growth at rural businesses is based on the Current Employment Statistics (CES) survey conducted by Bureau of Labor Statistics. Employment growth at rural households is based on the Local Area Unemployment Statistics (LAUS) survey conducted by the Bureau of Labor Statistics.

[4]Rural unemployment rate is calculated as the seasonally adjusted rate of county-level employment from the Bureau of Labor Statistics household data.

[5]Calculations are based on *Current Population Survey* data.

[6]Calculations are based on BLS employment data and USDA definitions of county typologies available at *www.ers.usda.gov/briefing/rurality.*

[7]The rise in crop prices and fall in government payments have led to higher farm incomes for farmers. USDA's net farm income forecast rose 8.3 percent from August to November as increased revenues from higher crop prices helped offset lower revenues from government payments.

[8]USDA groups crop production costs into two broad categories. Operating costs are the variable costs of production that include fuel, fertilizer, chemicals, seed, repairs, interest, and other variable costs. Allocated costs are the fixed costs associated with crop production that include labor, land, capital depreciation, taxes, and insurance. Fuel and fertilizer account for roughly a quarter of all costs, operating plus allocated costs, for corn, rice, cotton, and wheat producers.

[9]Bankers expected net farm incomes to increase for crop producers in Illinois and Indiana, reported in the *AgLetter*, "Farmland Values, and Credit Conditions in the Third Quarter", 2006, Federal Reserve Bank of Chicago, No. 1934, November 2006. In contrast, bankers expected farm incomes to fall in the Tenth Federal Reserve District as reported in "Farm Credit Conditions Stabilize and Farmland Value Gains Slow" by Nancy Novack, in *Survey of Agricultural Credit Conditions*, Federal Reserve Bank of Kansas City, Third Quarter 2006.

[10]Feed costs were obtained from USDA's High Plains Cattle Feeding Simulator available at *www.ers.usda.gov/publications/ldp/LDPTables.htm.*

[11]Red meats include beef, pork, lamb, and mutton. Poultry includes broilers and turkeys.

[12]The Tenth Federal Reserve District covers the states of Colorado, Kansas, Nebraska, Oklahoma, and Wyoming, the northern portion of New Mexico, and the western portion of Missouri. See the Tenth District *Agricultural Credit Survey* for more detailed information, *www.KansasCityFed.org/agcrsurv/agcrmain.htm.*

[13]The basis is the difference between the local crop price and the national market prices based on the Central Illinois price. The basis is derived primarily from the transportation costs associated with moving a crop from the local market to Illinois. Usually, the basis is higher when the distance is greater. Moreover, the basis tends to increase when energy costs move higher because transportation costs also increase. However, the construction of an ethanol plant increases local demand and substantially lowers the transportation costs and thus the basis. In a few places, the basis has reversed, where the local price is higher than the national prices because the ethanol plant must import corn outside the local area to fulfill production needs.

[14]On a real basis, farm assets rose 3.2 percent in 2006, while farm debt actually declined 1.8 percent.

[15]The farm debt capacity utilization ratio compares the amount of debt held by farmers and the estimated amount of debt that farmers could repay with current income levels. A ratio of 100 indicates that the amount of debt is 100 percent of the debt farmers could repay with current income levels. In 2006, the ratio indicates that farm debt is 61.9 percent of what farmers could replay with current income, up from 49.4 percent in 2005, and near levels reported in 2002.

[16]Whitehouse, Mark. "Economy Poised for '07 Rebound Forecasters Say," *The Wall Street Journal*, January 2, 2007.

[17]For more detailed information, see the Institute for Supply Management, "72nd Semi-annual Economic Forecast" report published in December 2006. The report was downloaded on December 20, 2006 at *www.ism.ws/about/MediaRoom/newsreleasedetail.cfm?ItemNumber=15722*. Private sector economic forecasters also expect service-based industries to produce stronger growth than the manufacturing sector in 2007 (Whitehouse 2007).

[18]Meat export forecasts were obtained from USDA, *Livestock, Dairy, and Poultry Outlook*, December 2006.

[19]Breakeven costs were obtained from USDA, *Livestock, Dairy, and Poultry Outlook*, December 2006.

[20]Ethanol production capacity data were obtained from the Renewable Fuels Association, *www.ethanolrfa.com*.

[21]Biodiesel production capacity data were obtained from the National Biodiesel Board, *www.biodiesel.org*.

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