
TEN
FEDERAL RESERVE BANK OF KANSAS CITY
Summer 2016
Inside:
The reallocation of energy sector workers
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IN DEMAND
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PHOTO BY KEITH BALL

TEN
Summer 2016

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FEATURES

IN EVERY ISSUE

President's
message

A gradual policy approach

"It seems rather striking that one of the ideas now firmly imbedded in our articles of material faith, the concept of governmental responsibility for moderating economic gyrations, is almost entirely a product of our own Twentieth Century.

"This concept, which is steadily being brought into sharper focus, has evolved from general reaction to a succession of material crises heavy in human hardship. It grew from mass desperation and demand for protection from economic disasters beyond individual control.

"The Federal Reserve System, which I have the honor to represent, was our earliest institutional response to such a demand. It emerged out of the urgent need to prevent recurrences of such disasters as the money panic of 1907, and out of the thought that the Government had a definite responsibility to prevent financial crises and should utilize all its powers to do so.

"Accordingly, … Congress entrusted to the Federal Reserve System responsibility for managing the money supply. This was a historic and revolutionary step. In framing the Federal Reserve Act great care was taken to safeguard this money management from improper interference by either private or political interests. That is why we talk about the overriding importance of maintaining our independence. Hence we have our system of regional banks headed up by a coordinating Board in Washington intended to have only that degree of centralized authority required to discharge effectively a national policy. This constitutes, as those of you in this audience recognize, a blending of public interest and private enterprise uniquely American in character. Too few of us adequately recognize or adequately salute the genius of the framers of our central banking system in providing this organizational bulwark of private banking and business.

"Since the Federal Reserve System came into being, the problems of inelasticity of currency and immobility of bank reserves—which so often showed up as shortages of currency or credit in times of critical need—have been eliminated, and money panics have largely disappeared.

"In this specialized respect there can be no doubt that the System has made notable progress, but in the more fundamental role of stabilizing the economy the record is not so clear. All of us in the System are bending our best efforts to capitalize on the experience of the past, and our current knowledge of money, so as to make as large a contribution as possible in this direction. But a note should be made here that, while money policy can do a great deal, it is by no means all powerful. In other words, we should not place too heavy a burden on monetary policy. It must be accompanied by appropriate fiscal and budgetary measures if we are to achieve our aim of stable progress. If we ask too much of monetary policy, we will not only fail but we will also discredit this useful, and indeed indispensable, tool for shaping our economic development." [1]

Former Federal Reserve Chairman William McChesney Martin's remarks more than six decades ago remain relevant today and in particular echo my own concern that the public has come to expect that monetary policy can solve for every problem that ails the U.S. economy.

[1] Addresss of William McChesney Martin before the New York Group of the Investment Bankers Association of America, Waldorf Astoria Hotel, New York City, Oct. 19, 1955.

The economic outlook

In Tenth Federal Reserve District states with a significant agricultural profile, the economy has softened. Across much of our region, the downdraft in commodity prices, combined with a strong dollar, has had a chilling effect on the regional economy.

Farm income is expected to weaken modestly in 2016, which would mark a third consecutive year in the current downturn. As lower income reduces cash flows, demand for credit among farmers has continued to rise. At this stage, the delinquency rate on agricultural production loans remains well below levels from five years ago, and farmland values, which are a significant contributor to the health of farm balance sheets, have remained relatively stable. Should these values erode further, we might expect to see further stresses on the agricultural sector.

Likewise, the dramatic fall in oil and gas prices over the past 18 months has negatively affected the region. The number of active oil and gas rigs in the United States has fallen by three-quarters, from almost 2,000 rigs at the peak to less than 500 today. Weakness in energy-related investment has spread to upstream suppliers in manufacturing sectors, resulting in broader signs of slowing capital investment across the nation.

Credit conditions have tightened for energy-related companies, and strains on the earnings are leading to substantial job losses, particularly within our region, which includes Oklahoma and Wyoming. The challenges facing those affected are substantial, although we do see that some of these workers are finding employment more easily than they did during the last oil price shock. [2]

Beyond these sectors, the U.S. economy

PRESIDENT ESTHER GEORGE talks with Kansas City Fed Board Director Max Wake, left, and Omaha Board Director Jeff Krejci following her speech on monetary policy and the economic outlook April 7, in York, Neb.

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[2] Brown, Jason and Andres Kodaka, "The Reallocation of Energy-Sector Workers after Oil Price Booms and Busts," Federal Reserve Bank of Kansas City, *The Macro Bulletin*, March 3, 2016.

as a whole has continued to expand, and it has been quite a long economic expansion by historical standards. Indeed, the Federal Open Market Committee (FOMC) viewed the economy as sufficiently sound last December to warrant increasing short-term interest rates.

Since the December meeting, economic data have largely confirmed an outlook for further growth. We have received four strong labor reports as well as data showing that inflation is moving higher.

Unfortunately, however, the initiation of raising interest rates coincided with what appears to be a more vulnerable global economy and a domestic economy that appears to be slowing in the first quarter and is threatened by markets that are anxious, uncertain and volatile. Faced with these dynamics, the Federal Reserve's decisions to continue to normalize its policy settings have become more difficult.

In the face of such headwinds and uncertainty, the FOMC is guided by a focus on longer-run objectives—those objectives outlined by Congress in the Federal Reserve Act and expressed by the FOMC in its annual Longer Run Goals and Monetary Policy Strategy: *"The Board of Governors of the Federal Reserve System and the Federal Open Market Committee shall maintain long run growth of the monetary and credit aggregates commensurate with the economy's long run potential to increase production, so as to promote effectively the goals of maximum employment, stable prices and moderate long-term interest rates."* [3]

Although financial markets were off to a volatile start this year, economic fundamentals remain relatively strong, particularly conditions in the labor market. More jobs were added in both 2014 and 2015 than in any other year since the late 1990s. This trend has continued with the economy adding an average of more than 200,000 net new jobs per month in 2016. The ongoing strength in job gains is well above the trend rate needed to absorb new entrants into the labor force. As a result, we have seen people who had been on the sidelines and not working over the past five years start to re-enter the labor force. And even as people have returned to the labor market, job growth has been strong enough so that the unemployment rate continued to fall over the last year. At 5 percent, the unemployment rate is quite close to the longer-run estimate of normal.

In addition to a healthy labor market, consumer spending has been supported by stronger household balance sheets. There are, of course, exceptions, but overall, household budgets generally look far less extended today than they did in the mid-2000s. The debt service ratio, which measures the burden of debt payments relative to income, is also lower than at any other time since the Federal Reserve started collecting data on this measure in 1980.

Household balance sheets also have benefited from housing prices. On a national basis, prices are close to where they were prior to the crisis. The supply of homes remains quite limited, relative to the total number of households, and is the lowest it's been for more than 40 years.[4] This combination of limited inventory, robust job growth and low interest rates will likely support continued home price appreciation. Those positive conditions will remain tempered by other factors weighing on housing. Credit conditions remain tighter than before the crisis, and bankers tell me new

[3] Section 2A of the Federal Reserve Act as amended by the Federal Reserve Reform Act of 1977.

[4] Rappaport, Jordan, "The Limited Supply of Homes," Federal Reserve Bank of Kansas City, *The Macro Bulletin*, March 23, 2016.

mortgage application procedures pose some challenges in moving borrowers through the financing process.

Overall, I view the health of household balance sheets and robust job growth as providing a foundation for consumer spending to continue making steady contributions to economic growth. This should allow GDP growth to continue near 2 percent, which I view as consistent with the economy's long-run potential.

With an unemployment rate of 5 percent, the economy is near full employment. Measures of inflation appear to reflect stable prices with upward movement in core PCE inflation year-over-year (from 1.3 percent to 1.7 percent over the past three months). In the interest of objectives to promote long-run sustainable growth with healthy employment and price stability, I believe monetary policy should respond to these developments by slowly removing accommodation.

The current stance of monetary policy

Today, monetary policy can be viewed as highly accommodative for three reasons. First, the current federal funds target range of between 0.25 percent to 0.5 percent is quite far from the fed funds' long-run level, which the FOMC views at around 3.25 percent. Second, the FOMC has signaled that the fed funds rate will be raised only gradually. And third, the Fed continues to hold a $4.2 trillion balance sheet, which has the effect of keeping longer-term interest rates low.

Years of experience, evidence and research remind us that monetary policy is most effective when used as a counter-cyclical tool. That means providing policy accommodation when deteriorating economic conditions threaten price stability and employment. Conversely, it means unwinding accommodation as we see economic conditions improve. In other words, the Fed should cut rates when the economy stumbles or contracts, and raise rates as the economy recovers and grows.

The limits of monetary policy

While monetary policy can be an effective counter-cyclical tool, it is by no means a counter-structural tool. That is, monetary policy can work to smooth out some of the ups and downs in economic activity but can do little to push the trend rate of growth higher. Any persistent attempts to do so will likely prove futile, as longer-run growth is driven by real factors like population growth, productivity and the accumulation of capital, both human capital from educational attainment and physical capital from business investment.

The FOMC has acknowledged that economic conditions will likely warrant a gradual pace of policy adjustments. I support that approach. A gradual path allows us to take into account various headwinds and risks faced by the economy, and to proceed in a manner that maintains policy settings that are—and will continue to be for some time—very accommodative.

While I view the gradual approach as appropriate, postponing the removal of accommodation when the economy is near full employment and inflation is rising toward the 2 percent target could promote alternative risks that would decrease the likelihood of achieving our longer-run objectives. In the long run, a failure to keep interest rate policy in line

with improving fundamentals can distort the allocation of capital toward less fruitful—or perhaps excessively risky—endeavors. Within the last two decades we have faced episodes of accelerating equity prices, housing prices and, most recently, commodity prices. Currently, commercial real estate markets, where prices have continued to drift higher, bear watching. When these types of imbalances tip, the entire economy can face the consequences of their fallout, with some sectors and populations more impacted than others. My concern for some time has been that extending monetary policy too far beyond its scope of capability risks undesirable financial, economic and political distortions.

"My concern for some time has been that extending monetary policy too far beyond its scope of capability risks undesirable financial, economic and political distortions."

In the current environment, waiting to make additional adjustments to monetary policy may seem costless in the face of benign inflation pressures. Some argue that we have the ability to make more rapid adjustments later if inflation moves higher than currently projected. From a technical standpoint, it is true that the Fed has the ability to steer short-term rates and could raise them quickly if needed. But such actions are likely to be costly, inducing financial market volatility and slowing economic activity. Historically, rapid increases in interest rates end poorly, resulting in economic recessions.

Conclusion

Staying the course with a gradual path of policy normalization is warranted in my view. Removing accommodation in small doses is consistent with the economy's fundamentals, keeps policy accommodative while global and domestic risks play out, and does not preclude pausing or responding if downside risks materialize.

ESTHER L. GEORGE, PRESIDENT
FEDERAL RESERVE BANK OF KANSAS CITY

The above message was adapted from a speech President George delivered April 7, 2016, at an Economic Forum in York, Neb.

more than words

Sentiment of the FOMC

Policy statements that the Federal Reserve's Federal Open Market Committee (FOMC) issues after each of its meetings receive wide attention, especially from the financial press. The statements are almost instantaneously parsed by reporters who try to understand why—or why not—a word or two out of more than 500 was changed from a similar statement issued a few weeks earlier and what that change may—or may not—suggest about the future path of interest rates and the economic outlook.

The statements are the end product of two days' of policy deliberations among the Federal Reserve's Washington, D.C.-based governors and the presidents of the 12 regional Federal Reserve Banks. These discussions involve a wide range of contributions, including presentations from economic staff and insight Fed officials have received from business and community leaders across the United States.

Depending on what is happening with the economy, these meetings can produce book-length transcripts filled with extended, often complex, discussions focused on the nuances of monetary policy. In addition to providing background on past policy actions, the transcripts may also be able to help provide a clearer understanding on broader issues, including how the FOMC's various components function and how these deliberations have changed over time.

Using the relatively new process of text mining, Federal Reserve Bank of Kansas City Assistant Vice President and Economist San Cannon analyzed more than 30 years of FOMC transcripts. By studying tone and word choice, she hoped to gain additional insight into how policy discussions are formed, how they relate to the performance of the economy and how they may have changed over time.

Working in a text mine

Text mining offers researchers the ability to take what is unstructured, qualitative data and give it a structure that can allow for quantitative analysis, helping to identify relationships and patterns. Cannon's research focused on determining the sentiment of all remarks made during FOMC meetings. From

THE FEDERAL OPEN MARKET COMMITTEE meets eight times a year. At these meetings, the committee reviews economic and financial conditions, determines monetary policy, and assesses risks to its long-run goals of price stability and economic growth.

a data processing perspective, it was a major undertaking, involving 33 years of meeting transcripts from the late 1970s through more recent transcripts from 2009. In total, they included nearly 115,000 comments made up of more than 7 million words.

One of the first steps was getting rid of unnecessary words, or so-called "stop words" including articles, conjunctions and helping verbs that offer little or no insight. After eliminating words like "and," "the" and "there," she was left with about 5 million words for analysis.

To determine sentiment, the process had to account for a number of potential hurdles presented by the way we use language. For example, words can be changed by the words around them: "admirable" is usually used as a positive, but "not admirable" is negative. Words can also carry different meanings in different setting: "liability" would likely be negative in most settings, but in a business discussion it may simply relate to an item on a balance sheet and carry no sentiment.

Through the analysis, Cannon was able to give each comment a score on a scale where zero represents a neutral tone for a comment while numbers above or below zero are positive or negative, respectively. Given the large amount of data involved, it is probably not surprising that Cannon discovered a number of things about policy deliberations, particularly related to the apparent contributions by FOMC members.

Economic insight

FOMC meeting participants can be categorized into one of three groups:

- Federal Reserve Governors: the Washington-based government officials with broad oversight responsibilities for the Federal Reserve system;
- Presidents of the 12 regional Federal Reserve Banks, who represent their respective Federal Reserve Districts; and
- Federal Reserve staff who present reports and answer questions.

Cannon's analysis uncovered a number of unique characteristics about each group.

The Federal Reserve's governors consistently made the most comments during policy deliberations; however, the average number of words per comment is shorter than either of the other two groups—about one-half the number of the regional Bank presidents. The differences in comment length, Cannon said, likely reflects the proportion of relatively short questions from the governors, while the regional Bank presidents and staff are providing longer statements describing economic conditions.

In measuring for tone, Cannon also found differences among the groups. Staff tone has remained relatively close to neutral, while the tone from the governors and presidents was varied, with the presidents generally being more positive than the governors over the period. Overall, the tone measures largely aligned with economic activity, turning generally more positive during expansions and falling during contractions.

From a forward-looking perspective, Cannon measured tone against the Chicago Fed National Activity Index (CFNAI), a weighted average of 85 economic activity indicators to see if the tone changed ahead of turns in the economy. Overall, she found that FOMC policy deliberations lead the CFNAI by as much as nine months. That means, for example, that a positive tone in policy deliberations from January through September is correlated with an above-trend in economic activity during October. Similarly, the FOMC deliberations with a negative tone would precede below-trend economic activity by the same margin.

When breaking up the broad FOMC data into the three groups of speakers, Cannon found comments by Federal Reserve Bank presidents led the activity measure by as much as a year. Comparatively, the governors' tone positively correlated with economic activity with just a one month lead while staff comments correlated with only a slightly longer period.

"The relationship between the presidents' tone measure and the activity index is the strongest of all of the speaker types and clearly leads the activity measure," Cannon said. "Presidents' regional information and strong ties to local business and community leaders could give them earlier information than other members of the FOMC."

The findings lend support to one of the key components of the Federal Reserve's regional structure and the connections between the 12 Federal Reserve Banks and the Districts they serve.

On the record

Today, FOMC transcripts are available online after a five-year lag. That, however, has not always been the case. One of the key changes in FOMC policies began in 1993 when then-Fed Chairman Alan Greenspan indicated that recordings of policy meetings had been made and stored since the 1970s. Prior to that time, not only were transcripts not available, it is not even clear how many FOMC members were aware that the meetings were being recorded. Soon after Greenspan's remarks, a process was created for making the transcripts publicly available.

Today, more than 20 years later, it is perhaps difficult to understand the significance of this revelation. The modern FOMC not only releases a lengthy and detailed policy statement after each meeting, but the Fed chair holds quarterly press conferences that include multi-page economic projections. In 1993, the FOMC was not making its policy decisions publicly known until weeks after the meeting, leaving Fed watchers on Wall Street to study measures of the money supply to determine if any policy tightening or easing had occurred. The first policy statement issued immediately after a meeting did not come until February 1994, and it was extremely short—fewer than 100 words—and mainly explained why it was released in the first place: "so as to avoid any misunderstanding of the Committee's purposes."

Not surprisingly, the move toward making meeting transcripts publicly available, even after a lag, became a topic of discussion at the policy sessions.

During a 1995 FOMC meeting, several members expressed concern that the change was having a potentially negative impact on what they thought previously had been open policy deliberations. Among them was former Kansas City Fed President Tom Hoenig, who told his colleagues that he was noticing "a lot more people reading their statements. I think it is harder to be as candid as some of us might otherwise be."

While it is impossible to judge if the

33 years of FOMC transcripts

Inside the Numbers

367 transcripts

29,802 different words

63,911 uses of the word "think" – the most-used word.

114,912 individual comments

7,477,899 total words

What's the word?

Given that the discussions focus on monetary policy, there is no surprise that some of the most frequently used words include "inflation" (28,832 times), "growth" (27,073 times) and "economy" (17,415); but some less-expected words came up a few times over the 33-year period as well:

4 uses of the word "zombie"
3 uses of the word "asteroid"
2 uses of the word "Batman"
1 use of the word "whiskey"

impact was negative or positive, Cannon's data does illuminate a significant change in behavior that supports Hoenig's remarks about an increase in the reading of longer, carefully-prepared statements.

"Even with a five-year lag, the transcripts are a rich source of detailed information about monetary policy deliberations."

"Several measures appear to have changed after 1993," Cannon said. "The number of comments per meeting decreased, but the number of words used per comment increased—so the total number of words was higher."

Another of Cannon's findings seems to lend at least partial support to Hoenig's view that the discussion was becoming less candid—the average number of unique words used per meeting dropped by almost 30 percent after 1993.

"It may be that, after 1993, there were more carefully-worded responses or more scripted presentations than would be found in a less-constrained environment," Cannon said.

Some of this change related to the types of words being used may also relate to the economic environment for much of the post-1993 era. During periods of above-trend economic growth, discussions were shorter with fewer unique words. The opposite was true during slow-growth periods with wordier discussions and an increase in unique words.

Cannon's research also made a number of other findings that may be of interest related to word choices. For example, the word "inflation" started to see more frequent use in 2004 and accounted for 1 out of every 100 words spoken during FOMC policy sessions in 2006. Not surprisingly, given the FOMC's mission of seeking price stability, "inflation" is one of the most frequently used words in policy deliberations throughout the period, finishing slightly ahead of "growth."

Overall, Cannon's findings suggest that Committee dynamics and even the roles of the individual participants may change over time. She also notes that the transcripts provide a wealth of information, although they have generally received far less attention than FOMC press releases and meeting minutes.

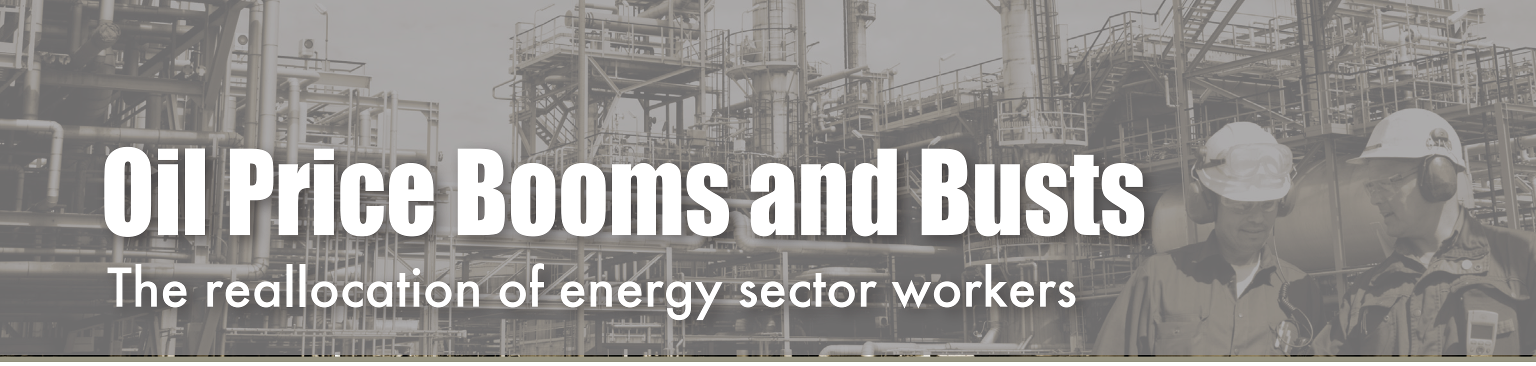
"Even with a five-year lag, the transcripts are a rich source of detailed information about monetary policy deliberations," Cannon said.

TIM TODD, CONTRIBUTING WRITER

FURTHER RESOURCES

"Sentiment of the FOMC: Unscripted"
by San Cannon
www.KansasCityFed.org/~/media/files/publicat/econrev/econrevarchive/2015/4q15cannon.pdf

COMMENTS/QUESTIONS are welcome and should be sent to teneditors@kc.frb.org.



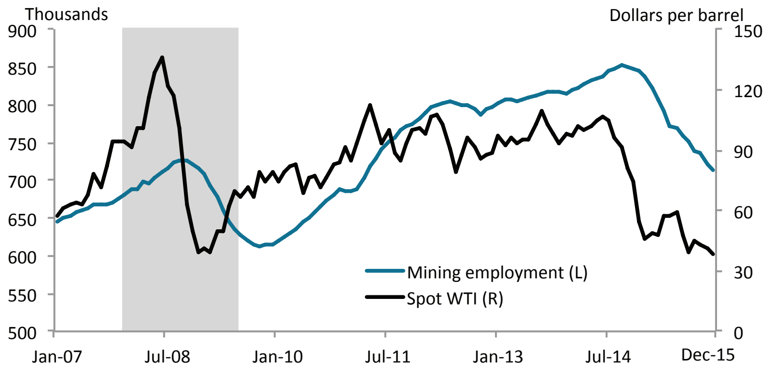
Oil Price Booms and Busts

The reallocation of energy sector workers

New technology and rising prices led to the rapid development of oil and natural gas extraction and production in the United States, creating many new jobs by the mid-2000s.

When the Great Recession took hold, the price of oil dropped from $136 per barrel by mid-2008 to as low as $39 by the beginning of 2009. The fallout led to 115,000 jobs lost in the mining sector. When oil prices surged during the recovery, mining jobs peaked at 825,000 just after the price of oil peaked at $107 per barrel in mid-2014. When prices dropped to below $40 a barrel in 2015, mining payrolls shed almost 140,000 by year-end.

WTI PRICE AND MINING EMPLOYMENT

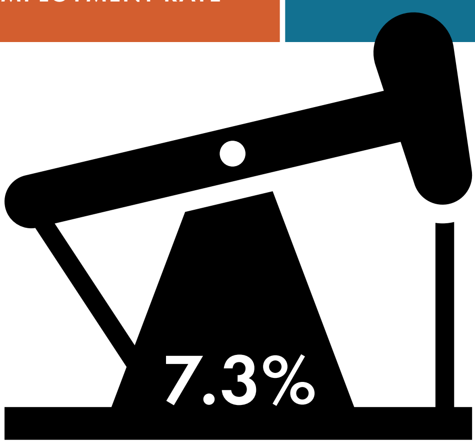


Sources: Energy Information Administration, Chicago Mercantile Exchange, Bureau of Labor Statistics, Haver analytics.

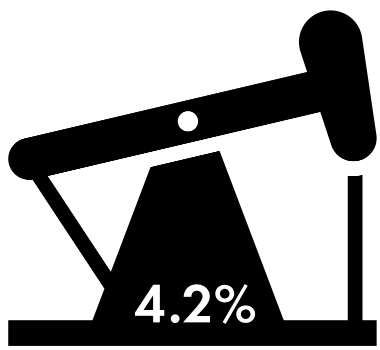
5%

UNEMPLOYMENT RATE

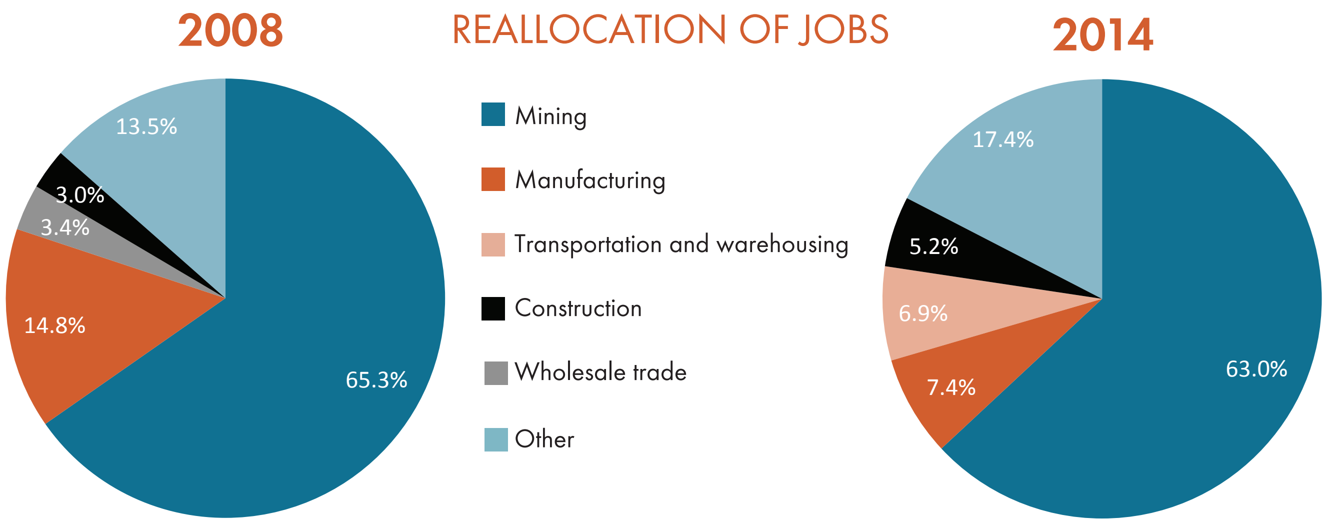
The difference in the most recent episode is that workers appear to have had an easier time finding other employment, mainly due to a much stronger economy. **The unemployment rate in the fourth quarter of 2015 was 5 percent compared to 9 percent in the fourth quarter of 2009.**



MINING EMPLOYMENT DATA



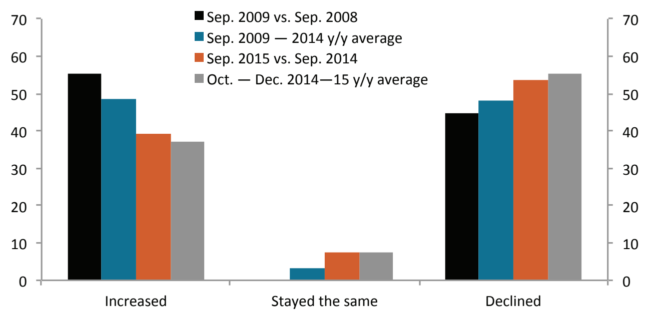
Senior Economist Jason Brown and Research Associate Andres Kodaka used information from the Bureau of Labor Statistics's Current Population Survey to follow and compare employment of individual mining workers who left the industry in 2009 and those who left in 2014. When employment in the sector was growing, an average of 1.2 percent of survey respondents were unemployed from one year to the next. From September 2008 to September 2009, 7.3 percent of mining workers became unemployed. From September 2014 to 2015, 4.2 percent became unemployed.



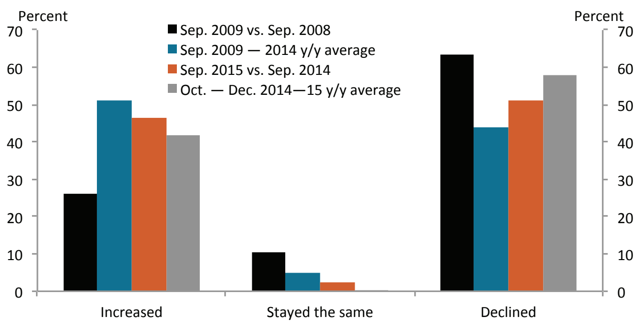
About two-thirds of those employed in the mining sector in September 2008 were still working in the sector a year later; workers who left the sector mostly went into manufacturing, as shown in the chart above. In contrast, the chart shows, slightly less than two-thirds of those employed in mining in September 2014 were still working in the sector a year later, and those who left moved into a broader range of sectors.

Sources: Current population survey, Census Bureau, Bureau of Labor Statistics, author's calculations.

EARNINGS IF RESPONDENTS STAYED IN MINING



EARNINGS IF RESPONDENTS LEFT MINING

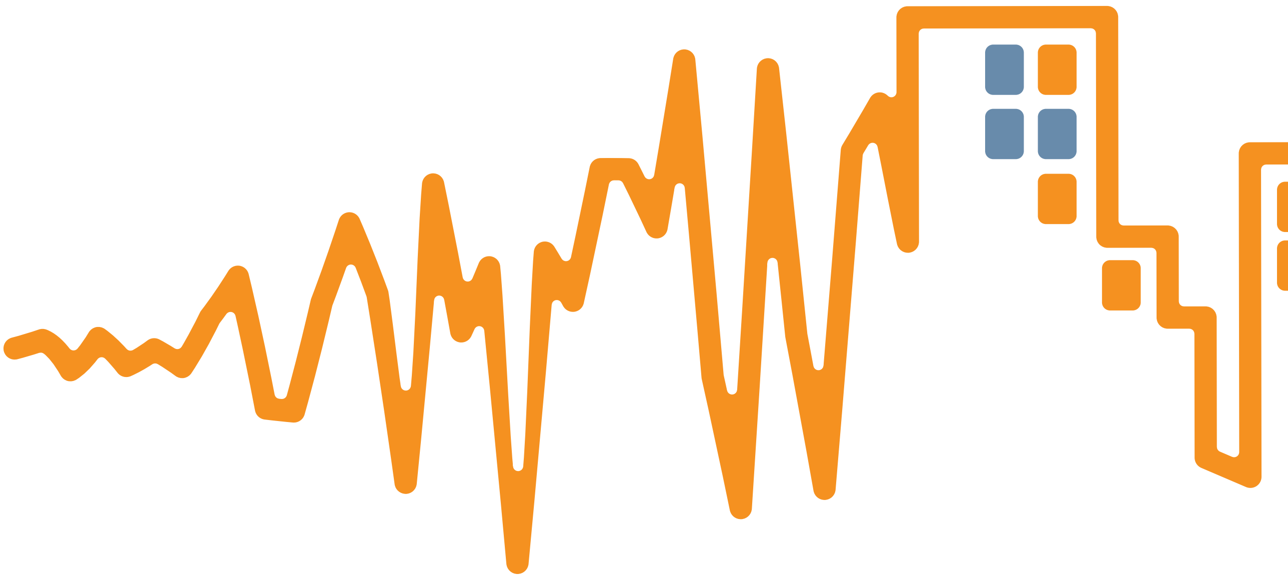


Earnings also differed between the two periods. Much of the difference depended on whether workers stayed in the mining sector. In 2009, 44.6 percent of workers who stayed in the sector saw their earnings decline compared to 63.4 percent of workers who left. When mining employment was growing, workers were more evenly split between increased and decreased earnings. However, as job losses continued in the later months of 2015, the percentage of respondents who reported higher earnings decreased, while the percentage reporting lower earnings increased regardless of whether they stayed or left mining.

Sources: Current population survey, Census Bureau, Bureau of Labor Statistics, author's calculations.

Brown and Kodaka found that during the recession, workers who stayed in mining were better off earnings-wise than workers who left. That reversed in the most recent employment decrease–more workers who left mining saw their earnings increase, while some who stayed experienced a decrease.

Further Resources: "The Reallocation of Energy-Sector Workers after Oil Price Booms and Busts" by Jason P. Brown and Andres Kodaka www.KansasCityFed.org/publications/research/mb



SHAKING THINGS UP

The economic toll of earthquake damage

The third largest earthquake in Oklahoma's history, registering a 5.1 magnitude on the Richter scale, happened last year outside of Fairview, which is just east of Enid in the heart of the state's oil and gas country.

"At first it was unnerving," said Roger Knak, chief executive officer of Fairview Regional Medical Center. "Now the earthquakes have just become normal."

On the U.S. Geological Survey's (USGS) website, www.usgs.gov, an animated map of Oklahoma illustrates the increase in seismic activity by placing a dot where an earthquake occurs. From June 9, 2008, to April 2013, 300 earthquakes were recorded—the dots appear as if tiny drops of rain are falling softly east of Oklahoma City. But from 2013 until two months ago, the northwest and north central section of the map explodes with dots of activity like a torrential downpour hitting a windshield.

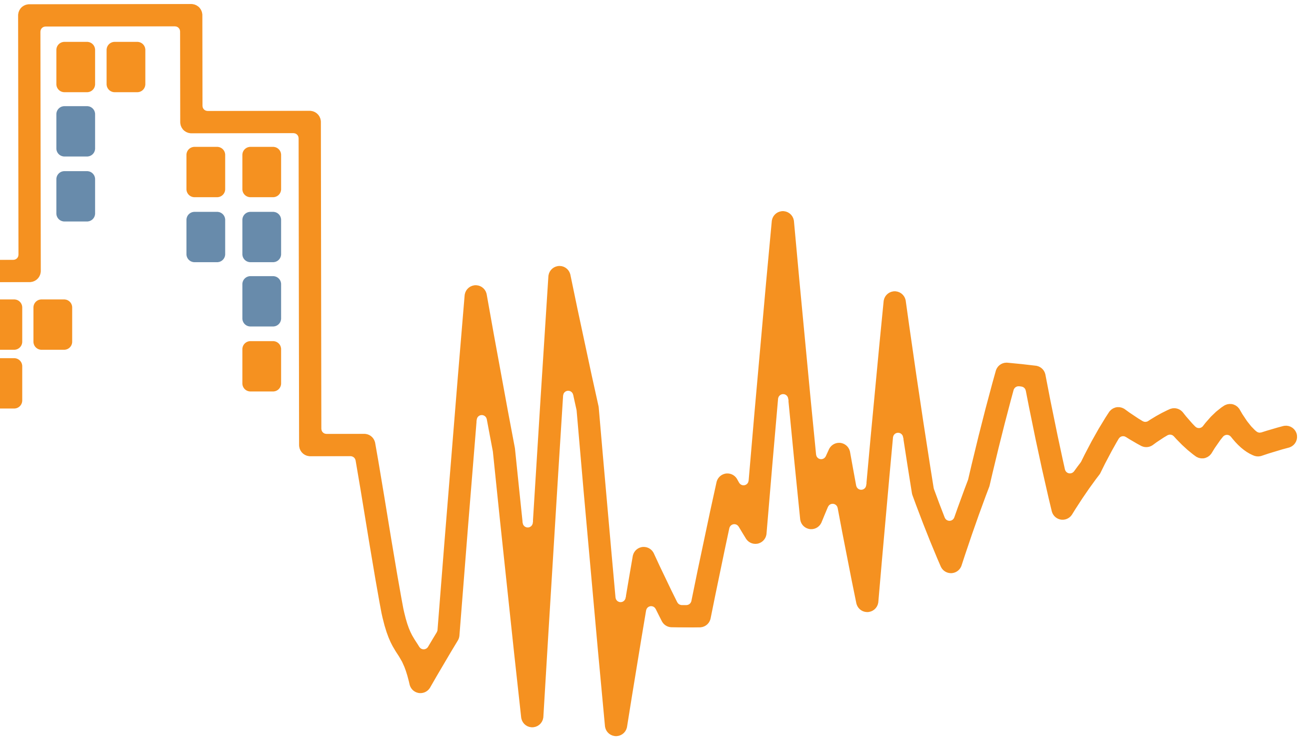
"The rate of earthquakes has increased sharply since 2009 in the central and eastern United States, with growing evidence confirming that these earthquakes are primarily caused by human activity, namely the injection of wastewater in deep disposal wells," the USGS said in a statement.

According to the USGS, advances in extraction technology have recovered oil and natural gas once thought unattainable with previous extraction methods. But the wells also extract a large amount of salt water left over from ancient oceans. The wastewater is pumped back in the ground below oil and gas extraction levels into the Arbuckle zone. This bed of limestone and dolomite, 7,000 feet below the surface, absorbs wastewater; however, it also places pressure on the Crystalline Basement—a dense layer of volcanic rock 13,000 feet below the surface that contains fissures and faults.

Scientists say that friction keeps the faults from moving; water pressure reduces the friction and causes a fault to slip, producing energy in the form of an earthquake.

The economic impact

Chad Wilkerson, branch executive and economist at the Kansas City Fed's Oklahoma City office, says the USGS estimates that the likelihood of a damaging earthquake has increased in parts of Oklahoma.



In 2015, the USGS reported more than 60 percent of earthquakes in the continental United States of magnitude 3 or greater occurred in Oklahoma. Specifically, there were 908 such earthquakes in the state last year, including 29 of magnitude 4 or greater.

"This compares to 558 earthquakes of 3.0 or greater in all other states, including 44 quakes of magnitude 4.0 or greater and three of magnitude 5.0 or greater—one each in California, Nevada and Idaho," Wilkerson said.

The National Oceanic and Atmospheric Administration (NOAA) reported there were 195 earthquakes of magnitude 5.5 or greater in developed countries from 1985 to 2015. This includes the earthquake near Prague, Okla., in November 2011, which was a magnitude 5.7. The earthquake injured people, destroyed six houses and damaged 20 others.

The magnitude or size of earthquakes is measured through the Richter scale, which measures the total amount of energy released by an earthquake, as conveyed on a seismograph from the amount of ground movement produced by seismic waves. The intensity of an earthquake is measured through the Modified Mercalli Intensity Scale, which is divided into 12 degrees by Roman numerals. A 3 magnitude earthquake, or intensity level II to III, is the weakest tremor that people can feel.

Damage estimates for earthquakes, such as the ones listed in the NOAA reports, are more available for occurrences in highly populated areas.

Damage estimates also can vary even if two individual places experience similar-size earthquakes. Local geology, population density, construction practices and epicenter location all can affect damage outcomes.

For example, the 2010 magnitude 7 earthquake in Christchurch, New Zealand, with a population size of 376,700, caused an estimated $7 billion in damage, while a 1992 7.6 magnitude earthquake in Landers, Yucca Valley, Calif., with a population of 17,000, caused an estimated $155 million in damage. The location of the epicenter and population density played a key role in these damage estimates.

"These large differences in economic damages across even similar-sized large earthquakes, combined with their relative infrequency and differing characteristics, make it impossible to provide close estimates of the likely economic consequences of any potential future quakes," Wilkerson said.

Yet, Wilkerson added, magnitude and intensity play a key role.

"Looking just at medians, the median economic damage of earthquakes of magnitudes greater than 6.5 since 1985 ($628 million) is about 3.5 times higher than the median for earthquakes of magnitude 5.5 to 6.5 ($178 million). And the median damage of large earthquakes in areas with populations greater than 250,000 (nearly $2 billion) is nearly 75 times greater than for those in areas with populations below 250,000 ($28 million)."

And most economic damages include only direct costs, not near-term additional costs to other industries resulting from less money being spent in local areas due to the disaster, Wilkerson said. The estimates also do not include the long-term economic benefits of rebuilding.

To get a better sense for the scale of damages from large earthquakes, Wilkerson said, someone could compare them with the economic damage caused by other types of disasters. Of the top 10 costliest U.S. natural disasters from 1985 to 2015, six were hurricanes, two were droughts and one was a flood. Hurricane Katrina tops the chart with an estimated $152.5 billion in damages in 2005. The 1994 magnitude 6.7 Northridge, Calif., earthquake came in at No. 3 and was the only earthquake in the top 10, with an estimated cost of $64 billion in damages. Although not as intense as other U.S. earthquakes, the Northridge earthquake's epicenter was in a densely populated area—1.4 million people.

Wilkerson says that perhaps the most relevant and familiar disaster comparison for Oklahoma is tornados. The two tornados since 1985 that have caused the most economic damage in the United States occurred in 2011—one in Joplin, Mo., and the other in Tuscaloosa, Ala. Each caused between $2.5 billion and $3.0 billion in damages (2015 dollars). But the third and fourth most-damaging tornadoes in recent U.S. history both occurred in the southern part of the Oklahoma City metropolitan area, in or near Moore. The most recent one, in 2013, caused about $2.1 billion in damage, while a previous large tornado in 1999 caused $1.4 billion.

"The economic damage of the two Moore tornadoes is similar to the median damage of large earthquakes in highly populated areas of developed countries since 1985—$2 billion," Wilkerson said.

So depending on the population, location and magnitude or intensity, Oklahoma could see millions or billions of dollars in damages if a large earthquake does occur.

Paying for the damages

Knak, of the Fairview Regional Medical Center, says thinking about the economic impact of earthquake damage is something new to Oklahomans.

"We're used to thinking about tornados," he said.

Although the state has not experienced a catastrophic earthquake, Oklahomans are dealing with how to pay for the current damage from the multitude of tremors.

"Adding the costs of earthquake insurance was something we would have never even thought of doing two years ago," Knak said.

But as residents and business owners think about the possibility that a more intense earthquake could occur, earthquake insurance seems like a reasonable choice.

"If Oklahoma was to have a 7-point or 7.5 earthquake, you could well be looking at a catastrophic loss and we could also be looking at a concentration of carriers," Oklahoma Insurance Commissioner John Doak said during a state Insurance Department hearing in May.

Oklahoma insurance regulators have been concerned about the condition of the state's market for earthquake insurance, especially after receiving reports of some insurance providers raising rates by up to 300 percent. And in some cases, insurers were unwilling to pay benefits to homeowners, saying the damage was not a "natural" disaster but the result of human activity.

AVERAGE AND MEDIAN EARTHQUAKE DAMAGE 1985-2015

Earthquakes in developed countries	Average damage ($mil, 2015 dollars)	Median damage ($mil, 2015 dollars)
All 5.5+quakes	$12,146	$484
Magnitude > 6.5	$23,966	$628
Magnitude 5.5 to 6.5	$2,145	$178
Population > 250,000	$20,705	$1,980
Population < 250,000	$172	$28

Sources: NOAA, U.S. Census, UNdata, Eurostat, Japan Statistics Bureau

That's why in June, Doak formally declared the state's market for earthquake insurance as "uncompetitive." The regulator says Oklahomans are unfairly limited when shopping for quake insurance. Most earthquake coverage in Oklahoma is written as an endorsement or rider on the homeowners' policy. Of the 119 companies that sell earthquake insurance in the state, Doak said four companies control more than half the market. The commissioner's order requires companies to submit rate increases before they can take effect, which makes it easier for Doak's office to challenge any increase it deems unfair.

Like many Oklahomans, Knak wants to see a permanent solution to decrease the amount of earthquakes in the state.

"I think what a lot of people want is for geology, scientists and the oil and gas people to reach middle ground and solve the issue, and it looks like they're heading that direction," he said.

Finding a solution

The Oklahoma Corporation Commission has been implementing directives for wastewater disposal operators, known as the traffic light system. The system allows staff to review disposal well permits for proximity to faults, seismicity in the area and other issues. All proposed disposal wells, regardless of location, now undergo a seismicity review. This has allowed the state to regulate the disposal of wastewater, sometimes through shutting down wells or regulating operations.

The new safety implementations, along with the drop in oil prices, have curbed production in the state—ultimately decreasing the amount of seismic activity.

The Oklahoma Geological Survey recently reported that the number of earthquakes in Oklahoma fell by 52 percent between January and April of this year. The data also show the number of monthly earthquakes has fallen by 55 percent since an activity peak in June 2015.

Oklahomans, however, know there is a fine line in the regulation of oil and gas wells. Oklahoma and energy have ties going back to the state's founding. Energy makes up five percent of the state's labor force, but other business sectors also rely upon it. The recent drop in oil prices has already had devastating affects on the labor market and government budgets.

"I don't want my house falling down, but we don't want to hurt the source," Knak said. "The local economic impact of over-restricting oil and gas would be more devastating than the earthquakes."

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KEVIN WRIGHT, EDITOR

FURTHER RESOURCES

"How Much Economic Damage do Large Earthquakes Cause?" By Chad Wilkerson
www.KansasCityFed.org/publications/research/oke/articles/2016/economic-damage-large-earthquakes

COMMENTS/QUESTIONS are welcome and should be sent to teneditors@kc.frb.org.

PHOTO BY KEITH BALL

IN DEMAND

Lack of available homes for sale challenges market

A few months ago, a single-family home in Overland Park, Kan., went up for sale. Within 24 hours, the house had 27 showings and a bidding war ensued among four potential buyers. A short time later, the buyer who came in with an all-cash offer bought the house for about $270,000.

"It wasn't a higher-end house," said Dennis Curtin, president of RE/MAX Mid-States and Dixie Regions/Ireland. "The house is what you would consider for the area just above the starter-home range."

This type of sale is common in today's housing market, Curtin said—a result of the supply shortage of new and existing homes for sale.

New housing starts

The economy has shown signs of improvement. Unemployment is down, consumer confidence is up and financial institutions have reported an increase in consumer debt—meaning people are easing their frugal spending habits ingrained by recession. Home sales also have shown some improvement since the recession, but there have been several highs and lows.

In April, new single-family home sales surged by 16.6 percent across several regions, except for the Midwest, where sales fell, according to recent housing data.

Jordan Rappaport, a senior economist at the Federal Reserve Bank of Kansas City, says the increase in sales shows there is a strong demand for new homes.

"One factor constraining sales is the limited supply of new homes available for purchase," he said.

For instance, although homes sales increased in April, the ratio of listed homes relative to sales—months supply—remains well below figures before the recession and has remained modest since the recovery. Most of the April increase in new sales was for pre-construction homes—people paying for the construction of a home for which a permit had been issued.

Curtin says that although there is a surge in demand and prices, the cost of building a new home has gone up since the recession due to available property values, material cost, labor and regulations. The only way to make money in new construction is to build higher-end homes, he added.

"If I was a builder trying to make a living off of this, I wouldn't do it," Curtin said.

Katrina Washington, broker and owner of Stratos Realty in Oklahoma City, used to work regularly with five developers before the Great Recession. After the recession, only two remain in the business.

Some developers got out of the business voluntarily and others were forced to close their businesses. To survive, some decided to concentrate on other segments of the housing industry, such as repairs and remodeling.

"If a buyer wanted to build a home, there isn't a lot to choose from," Washington said.

Curtin says you won't see anyone building 40 to 50 spec homes anymore; it's too much of a financial risk. And many developers can't afford to keep crews at full capacity.

Rappaport thinks increasing sales prices for single-family homes, however, will encourage developers to build new homes, improving the supply in the market. But it will be nowhere near pre-recession levels.

In February, annualized home starts equaled just 6.4 percent of U.S. households, about half its average during the 1980s and 1990s.

"Ramping up to higher rates of construction will take time," Rappaport said.

Washington, who also serves on the Kansas City Fed's Community Development Advisory Council, says securing funding is another issue for developers. Since the recession, financial institutions have been cautious about lending for new housing developments, either due to increasing regulations or uncertainty about the market or both.

"When looking at the housing issue, it's about affordability," Curtin said. "Both for the buyer and who's financing the purchase."

April's new home sales may have improved over previous numbers, but the level of construction remains at a historic low, Rappaport said. Over a 12-month period through April new sales grew at a 10 percent annual rate, which is probably close to the maximum that is sustainable in today's market, he added.

DENNIS CURTIN, PRESIDENT OF RE/MAX MID-STATES AND DIXIE REGIONS/IRELAND, says home prices are being driven by the lack of available houses for sale.

PHOTO BY GARY BARBER

Existing home sales

The lack of affordable new construction has pushed buyers into the existing home sales market, which showed an increase of 0.6 percent in April. A limited supply of homes, however, has also dampened sales.

Rappaport measured the supply of existing single-family homes relevant to the number of U.S. households. He found that the number of existing homes listed for sale has remained at 1.6 percent of U.S. households since early 2013, slightly below brief lows in 1995 and 2000. Foregoing the April increase, the number of new and existing single-family homes for sale collectively has remained at about 1.7 percent of U.S. households since early 2013, significantly below pre-crisis levels and below previous lows.

The lack of affordable new construction, Curtin says, has caused the value of existing homes to increase, especially older ones, which have become a hot commodity in the Midwest and Southern regions.

"They've become the entry-level home of the first-time buyers market," he said.

Rappaport says the limited supply of these homes, along with the improving labor market and strengthening consumer confidence, has placed pressure on purchase prices.

The average sales price for an entry-level home fluctuates throughout the Tenth District states, ranging anywhere from $180,000 to $270,000.

Data shows demand pressure has accelerated the annualized rate of price growth from below 4 percent during the first half of 2015 to above 8 percent over the remaining six months through January 2016. Rappaport thinks, however, that rising prices may only moderately increase the number of existing homes for sale because sellers will face rising prices if they wish to purchase a new or existing home to move into.

The increase in prices and the tightening of mortgage loan qualifications also have made it difficult for people to become a first-time homeowner, especially low- to moderate-

HOUSING CONSTRUCTION TRENDS

Single-family construction since 1990 can be divided into four periods: pre-boom, boom, crash and recovery.

Pre-boom
From 1990 to 2002, single-family construction was characterized by several runs of moderate-to-strong growth punctuated by several moderate retrenchments.

Boom
From late 2001 through late 2005, the growth of single-family starts accelerated to an average annual rate of about 10 percent.

Crash
From late 2005 through early 2009, single-family construction plunged. Starts contracted at an average annual rate of almost 30 percent, with a cumulative decline of more than 70 percent.

Post-crash
From early 2009 through mid-2013, single-family construction began with a boost from the tax credit for first-time homebuyers followed by an offsetting contraction when the credit expired. Vigorous growth of single-family construction resumed in mid-2011, but paused at the beginning of 2013. Since then, new construction has grown at an actualized rate of about 1.7 percent annually.

Multifamily construction since 1990 can be divided into three periods: pre-crash, crash and recovery.

Pre-crash
During the long pre-crash period, multifamily construction first fell sharply and then rebounded. Then, from late 1998 through early 2006, multifamily starts remained approximately constant.

Crash
Although there was no boom in multifamily construction, there was a crash. It began in mid-2006 and significantly accelerated in mid-2008. Over a three-and-a-half year period, multifamily starts fell by three-fourths.

Recovery
In sharp contrast to weak post-crash growth in single-family starts, multifamily starts rebounded almost immediately. As of mid-2013, multifamily starts regained two-thirds of the preceding fall. Total multifamily spending as of January 2016 was at a seasonally adjusted annual rate of $59.8 billion, which is higher than the peak readings seen during the housing boom years, and is a 30 percent increase year-over-year.

—Jordan Rappaport

KATRINA WASHINGTON, BROKER AND OWNER OF STRATOS REALTY in Oklahoma City, says the housing supply has limited buyers' options, especially for first-time homebuyers.

income individuals, Washington said.

In Oklahoma City, a starter home could range from $185,000 to $225,000, and for a first-time buyer there is no affordable new construction.

"They don't have many options," she said.

This lack of supply flies in the face of the preconceived notion that there remains of glut of desirable homes for sale due to foreclosures and bank receiverships of developments from the recession and recovery.

Following the recession, Curtin said for a while investors or financial groups were prevalent in buying foreclosures and short sales—real estate in which the net proceeds from selling the property will fall short of the debts secured by liens against the property. These groups paid cash and either fixed up the homes for re-sale or turned them into rental properties.

"Investors are not as prevalent," Curtin said. "The inventory of desirable homes on the market due to foreclosures or short sales is drying up, so buyers are competing within the same price-range market for (existing) homes."

Although the shortage of existing homes has caused prices to increase, the average homeowner is only seeing an equity increase of 2 to 8 percent a year, Washington said.

And even though multiple buyers make offers on a house, appraisers are coming in soft with appraisals, which makes it difficult for buyers to purchase homes using a traditional mortgage loan—a reaction to the inflated home prices and mortgage lending practices that led to the recession, Curtin said.

Washington says this has led to an increase of cash sales of about 20 to 30 percent in her area. Curtin also has seen an increase in cash sales, estimating they make up about 25 percent of all sales in his regions.

"Investors still make up a percentage of those sales, but it's a much smaller percentage," he said.

The increase in cash sales is helping to push sales prices upward.

"They don't have to worry about appraisals or banks lending them the money," Curtin said.

So where are people getting the cash?

Curtin and Washington say some are cashing in their retirement funds, while others are taking their money out of stocks or bonds and other investments and re-investing in property.

Despite improvements in the economy, for many people, whether as a first-time buyer or someone buying a second home, homeownership remains out of reach.

"A lot of people still haven't got to where they can purchase again," Washington said.

This is one of the reasons the rental market remains hot right now.

An increased demand for rental property

The demand in the rental market in some ways directly correlates to the recession—many people who lost their homes in foreclosure turned to renting, and people who once qualified under pre-recession conditions no longer qualify for mortgage loans.

Tastes within the housing market also have changed. There's a growing trend among baby boomers and Millennials to move into multifamily housing, especially in urban areas, Rappaport said. Many businesses also have moved from the suburbs to central business districts, finding it easier to attract and retain employees there.

"In the past, single-family homes were primarily constructed in new suburban subdivisions at the periphery of metro areas," Rappaport said. "Going forward, a much larger share of homes are likely to be constructed closer to the center of metro areas, but this infill will be constrained by limited undeveloped land and regulations on land use."

This change in taste may improve the housing supply as baby boomers downsize from single-family to multifamily homes. The trend, however, probably won't occur until baby boomers reach their late seventies, which is five years away for the leading edge of that generation, Rappaport said.

So for now, Rappaport thinks the housing supply will remain tight continuing to push purchase prices upward and place constraints on multifamily housing.

Since 2015, rent on multifamily homes has increased at more than a 4 percent annualized rate. And the price pace for co-ops and condos is similar.

"We do see a lot more of higher-end rentals," Washington said. "However, there is still a lack of affordable properties to rent."

Even with the market trending toward multifamily housing, Curtin says buyers can still get more for their dollar purchasing a home in the suburbs.

"The square-footage is still there," he said.

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KEVIN WRIGHT, EDITOR

FURTHER RESOURCES

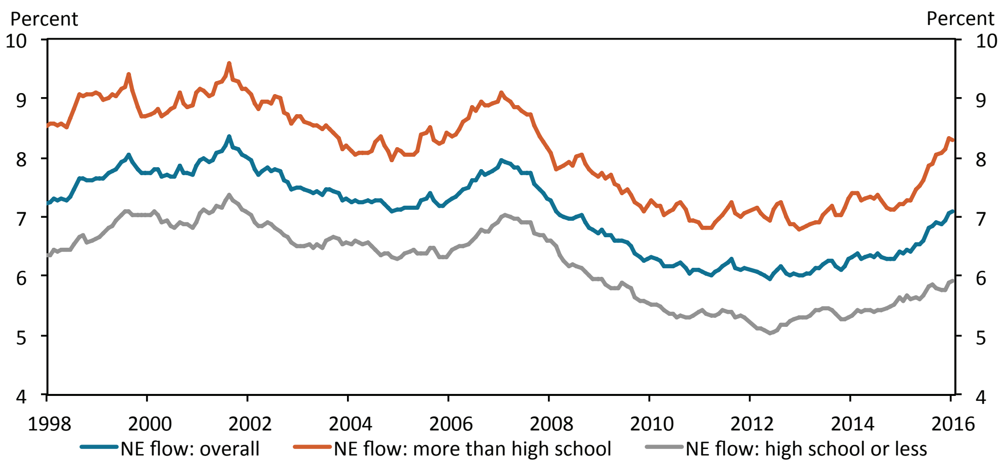
"The Limited Supply of Homes"
by Jordan Rappaport
www.KansasCityFed.org/publications/research/mb

COMMENTS/QUESTIONS are welcome and should be sent to teneditors@kc.frb.org.

WHERE CAN THE PARTICIPATION RATE GO FROM HERE?

After a long stretch of declines since the Great Recession, labor force participation has risen in recent months.

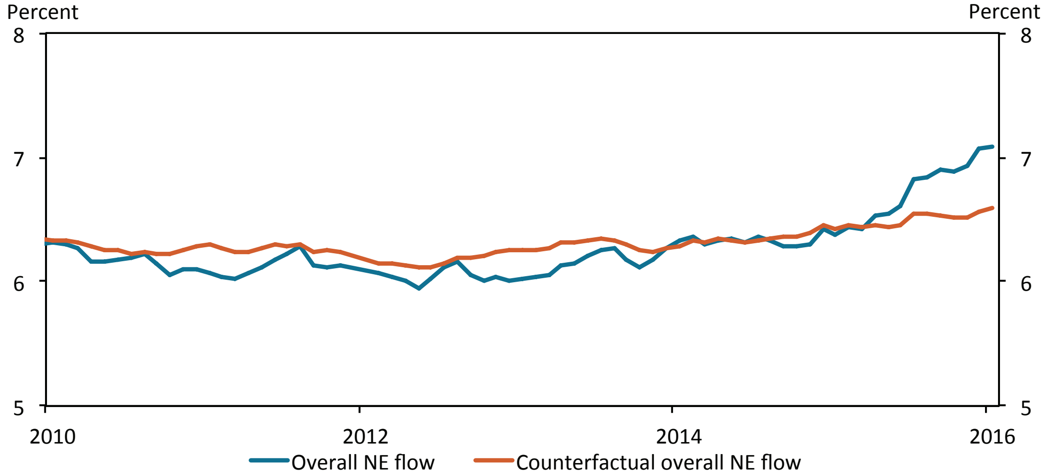
NE flow rate for prime-age population



Sources: Bureau of Labor Statistics and economists' calculations.

One development in the labor market this past year is an increase in the share of prime-age workers (25-54 years old) flowing back into workforce, called the NE flow rate. This is good news for the labor market because, all else equal, it drives up the labor force participation rate. The growth in prime-age workers in the labor force, however, is limited to people with higher educational attainment—two to four years of college or more. The growth rate of prime-aged workers with a high school education or less during the same period remained stable.

NE flow rate scenarios

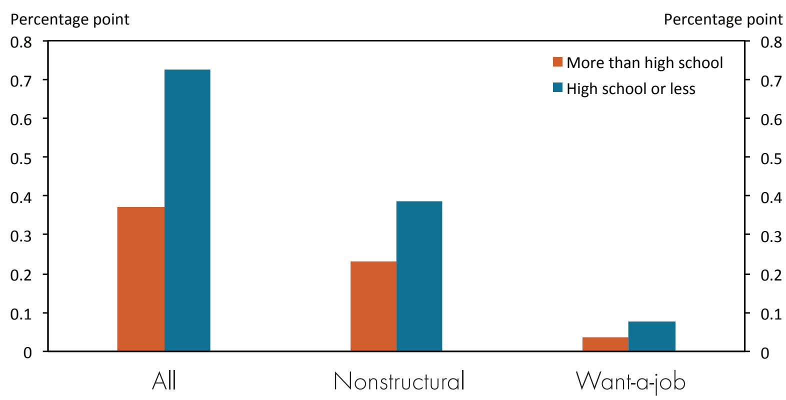


Sources: Bureau of Labor Statistics and economists' calculations.

To better gauge this recent development, Federal Reserve Bank of Kansas City economists José Mustre-del-Río and Michael Redmond, and research associate William Xu created a scenario that fixed the increased flow rate of highly educated workers in 2015 to 2013-2014's averages (counterfactual overall NE flow rate). They found that the NE flow would have only increased slightly in 2015 if it weren't for the contribution of highly educated workers.

The economists went a step further and gauged the potential effects of changes in the prime-age participation rate on the overall participation rate. The economists differentiated between increases in the prime-age participation rate for individuals with more than a high school degree versus high school or less. They also took into account differences in attachment to the labor force within the pool of workers without a job–people who wanted a job versus those who didn't and excluding the retired or disabled. In essence, they created scenarios that allowed them to distinguish what the overall labor force participation rate would be if the participation rate of these individual groups returned to their pre-recession levels.

Labor force participation rate scenarios



Sources: Bureau of Labor Statistics and economists' calculations.

Key finding

Although the scenarios showed that more prime-age workers could enter the labor force in the coming years, the cyclical improvement in the overall labor participation rate may be limited to only those workers with higher educational attainment flowing into employment. The potential increase in participation, the economists say, could be constrained by other influences, such as an increase in the prime-age population that reports they are either retired or disabled and a limited pool of people who say they want a job but haven't looked for one recently. Given these issues, although a higher NE flow indicates the prime-age participation rate could increase further, its contribution to the overall participation rate may be modest.

Further Resources

"Flowing into Employment: Implications for the Participation Rate" by José Mustre-del-Río, Michael Redmond and William Xu
https://www.kansascityfed.org/~/media/files/publicat/research/macrobulletins.

PHOTO BY SARAH KEMP-POPE

LIFE LESSONS

Student Board of Directors programs across the Tenth District close with formal pinning ceremonies

Parents, teachers, friends and members of the Federal Reserve Bank of Kansas City's Student Board of Directors programs in Tenth District cities of Kansas City, Omaha, Denver, Oklahoma City and Albuquerque marked the completion of a successful year for the program during special ceremonies this spring.

The Bank is committed to ensuring that its programs reach underserved populations in the education realm, especially majority-minority high schools, inner city high schools and all girls' high schools. As part of this commitment, the Bank conducts the Student Board of Directors program to offer high-achieving high school students the opportunity to meet with representatives of the Kansas City Fed and local businesses to better understand the economy and the role of the nation's central bank. The composition of the Student Boards of Directors reflects the diverse demographic makeup of those schools and communities.

Bank President Esther George, along with members of the Kansas City head office's Board of Directors, attended the ceremony in Kansas City and mingled with the 25 student board participants and their families beforehand. Jeanine Smith, mother of student board member Janeé Taylor, a senior at Wyandotte High School in Kansas City, Kan., was thrilled when her daughter joined the Student Board of Directors program last fall.

"She's gotten so comfortable speaking in front of people and sharing her story," Jeanine said. "She's had the chance to speak to a professional audience and work on her presentation skills."

Student board member Sonia Badji, a senior at Lincoln College Prep Academy in Kansas City, Mo., has enjoyed all of the advice and workshop experience she collected from the program.

"I've learned values that are integral to

Members of the 2016 Kansas City office Student Board of Directors visited Google Fiber offices in the Westport district during a business tour.

KANSAS CITY FED PRESIDENT ESTHER GEORGE speaks with Tony Luu, who graduated from the Kansas City program and, Paula Schaaf, coordinator of Early College Programs for Kansas City Public Schools.

being a professional in the business world," she said.

Twenty members of the Denver and Albuquerque Student Board of Directors were recognized at pinning ceremonies to formally close the school year. Denver had 11 student board members and Albuquerque's student board had nine. During the programs, each student shared their most important lessons learned from the program. Their answers ranged from the importance of Federal Reserve in the economy to the wisdom imparted to them by local business leaders.

The Omaha Branch recognized 14 students from Omaha Central, Omaha South and Omaha Bryan High Schools for completing the 2015-2016 Student Board of Directors Program. During the recognition ceremony, John Bourne, international representative with the International Brotherhood of Electrical

Omaha

Kansas City

Workers and chair of the Omaha Branch Board of Directors, spoke to the students about the importance of life-long learning, and the students gave presentations on what they gained from the program.

Members of the Oklahoma City Student Board were recognized at a pinning ceremony where they participated in a panel discussion and shared their most important lessons from the program. Fifteen students from seven Oklahoma City high schools completed this year's program. Lessons shared by the students ranged from the importance of sending a thank you card to a better understanding of economics and personal finance.

"We covered a lot of topics, from banking to business etiquette to budgeting," said Jordan Cole of John Marshall High School in Oklahoma City. "Everything I learned as Student Board member I can take with me the rest of my life."

Another student board member noted how the experience enhanced her understanding of the nation's central bank.

"I liked that the Student Board program humanized the Fed and the Fed's role in our economy," said Samaiyah Harpe of Harding Charter Preparatory High School. "It showed me how multifaceted and interesting the economy can be." The Omaha office had 14 students from this high school complete the program.

During the closing address for Kansas City student board members, Bank President George addressed the students and congratulated them for completing a year with the student board program.

"What makes the economy work has to do with individuals and the choices people make," she said. "We are delighted that one of your first choices was to be part of our program."

For more information about the Student Board program, visit the Bank's website at https://www.kansascityfed.org/education/foreducators/student-board.

"What I took away from the Student Board Program was the opportunity to talk to people in the business world in fields that I was interested in," said Karina Navarro, Omaha South High School. "I also enjoyed meeting with other students from other schools to learn together how it will be for us in the real world."

Denver

Oklahoma City

Albuquerque

MAKING A CONNECTION

IN FOUNDING THE FEDERAL RESERVE MORE THAN A CENTURY AGO, Congress recognized the importance of connecting the nation's central bank to the Main Streets of America. The Federal Reserve Bank of Kansas City carries out this role through its president and its programs and activities throughout the Tenth District, and beyond. Here is a glimpse at the recent activities of President Esther L. George and the staff of the Kansas City Fed.

George spoke at a luncheon May 12 for 240 business and community leaders in Albuquerque, N.M.

George (below) speaks with members of the Fairfax Industrial Association during a luncheon May 19 in Kansas City, Kan.

In May , George, center, took time for a photo (below, right) with Nebraska Bankers Association past chairmen, from left, Samuel Baird, Craig Brewster, Matthew Williams, John Stinner, Jeff Krejci, Michael Nelson and Ronald Kranz.

George met with Jun-ichiro Kuroda, left, Minister of Economy, Trade, Industry and Energy at the Embassy of Japan, and Ichiro Soné, chief executive director of Japan External Trade Organization-Chicago, on March 24 at the Kansas City Fed's main office.

George hosted the Kansas City Labor Leader Roundtable May 16 at the head office of the Kansas City Fed. George, center, is pictured with (from left) Stephen White, Joseph Blanco, Reginald Thomas, Greg Chastain, Fred Ersery, Terry Akins, Jack Bainbridge, Patricia Jones, Eric Hall, Pat "Duke" Dujakovich, Amber Gibson, Fred Voigt, Kevin Kuritz, Scott Grandon, and Kevin O'Neill.

Building relationships ...

Investment Connection: connecting funders and community organizations in New Mexico and Colorado

The Federal Reserve Bank of Kansas City's Investment Connection was recently held in Albuquerque and Denver. This program has helped match financial institutions, corporate enterprises and community foundations with organizations that have CRA-eligible community and economic development proposals in need of an investment, grant or loan. Sixteen proposals were presented to more than 130 potential funders during the two events. Since 2011, Investment Connection has connected nonprofits with more than $26 million in funding. Additional events are planned in Omaha, Oklahoma City and Kansas City for later this year.

SBA Administrator speaks on the importance of small business

In support of Small Business Week, the Kansas City Fed's Denver Branch office, in partnership with the local office of Small Business Administration (SBA) had an event commemorating Colorado Women in Small Business. The event included a panel of local women entrepreneurs discussing the issues, challenges and rewards of owning and running a small business. The keynote speaker was SBA Administrator Maria Contreras-Sweet. She highlighted the importance of small businesses in the community and their impact on the local economy.

Seminars update member banks on regulatory issues

The Kansas City Fed's Denver office conducted regulatory update seminars in Denver and Albuquerque in April. The seminars focused on current issues and strategies relevant to state member banks and holding companies. Topics covered during the updates included the economy, current banking conditions, and executive highlights of safety and soundness and consumer compliance regulatory guidance.

Wilkerson speaks with emerging leaders in community banking

Chad Wilkerson, branch executive and vice president at the Federal Reserve Bank of Kansas City, Oklahoma City office, spoke to a group of Horizon Leaders during a community bankers meeting March 1 at the Oklahoma City office. He discussed the national monetary policy outlook, trends in Oklahoma's economy and banking conditions in the state.

Outstanding economic students recognized

The Oklahoma City office of the Federal Reserve Bank of Kansas City and Oklahoma Council on Economic Education honored 12 students at the Sixth Annual Outstanding Economics Student Awards on April 28. This program recognizes exemplary students and highlights the importance of economics in Oklahoma curriculum and shines a light on students who exhibit an economic way of thinking.

"Economics is all around us, so if students can be taught and inspired in the analysis of the production, distribution, and consumption of goods and services, they will have great tools to be successful in any field they choose," said Amy Lee, executive director of the council.

Community leaders meet at roundtable in Oklahoma City

Tammy Edwards, vice president of the Kansas City Fed's Community Affairs Department, spoke with a group of community leaders during a roundtable discussion at the Oklahoma City office on April 13. Community members in attendance represented groups from local nonprofit, housing and community organizations. The group provided a diverse perspective of local community development efforts, challenges and opportunities.

FDIC Banker Roundtable

The Nebraska Bankers Association hosted a roundtable for bankers with Thomas Hoenig, vice chairman of the FDIC, on May 18 at the Omaha Branch of the Federal Reserve Bank of Kansas City to discuss regulatory relief. Kansas City Fed President Esther George and Omaha Branch Executive Nathan Kauffman, Mark Quandahl and Kelly Lammers with the Nebraska Department of Banking, NBA Board members and Omaha area bank leaders attended the session.

Sharing the importance of entrepreneurship

Community Development Advisor Dell Gines spoke on the importance of youth entrepreneurship education at the Nebraska Entrepreneur Educator Workshop on April 15. The Kansas City Fed offers a number of classroom resources to help equip educators to teach entrepreneurship. The Bank also provides resources for economic developers and small businesses owners, including the Grow Your Own model entrepreneurship-based economic development.

Board meeting, forum take look at local economy

The Omaha Branch Board of Directors met in York, Neb., on April 7 and 8. As part of the agenda, Board members and Fed staff toured Monsanto's facility outside of Waco, Neb., to learn about their operations and role in the local economy.

In conjunction with the offsite Board meeting, the Omaha Branch had an Economic Forum in York with approximately 170 business, banking and community leaders in attendance. Omaha Branch Executive Nathan Kauffman provided an update on the Nebraska economy, and Kansas City Fed President Esther George spoke on the economic outlook and monetary policy.

Ask an Economist...

How effective are data breach notification laws?

Richard J. Sullivan

Data breaches expose sensitive information often used for payment fraud and identity theft. These exposed records provide essential data to thieves, who in 2014 victimized 17.6 million people in the United States. The situation is worsening, which has prompted U.S. policymakers to place greater emphasis on procedures to protect consumers from harm. Senior Economist Richard J. Sullivan and Payments Analyst Jesse Maniff say one such approach is breach notification laws. Their recent study looks at identity theft complaints and investigates how provisions of state data breach notification laws affect identity theft.

How prevalent are data breaches in the United States?

In 2014, 1,343 breaches occurred in the United States, exposing 512 million records, which is an increase from previous years. For instance, more than 600 breaches occurred in 2009 and 1,054 in 2013.

How many states have adopted breach notification laws?

Forty-seven states and the federal government have adopted some form of law that requires organizations sustaining a breach to disclose the incident and notify consumers if their data were exposed.

Are these laws effective?

Some research has shown that notification laws can reduce the rate of identity theft, but oversight might be needed to encourage compliance. What information organizations disclose to consumers after a breach may also be important to consumer protection.

What provisions within these laws help protect consumers?

Data breach notification laws enable victims to take actions to protect against identity theft, but provisions within notification laws may vary in how effectively they provide this opportunity. We evaluate a state's effectiveness in deterring identity theft by the provisions provided in that particular state's law. We found states that included the "State Enforcement" provision, which allows the attorney general or another designated state entity to enforce organizations' failure to comply with the statute, had fewer incidents of identity theft than states that did not include the provision. Another effective provision was "Explicit Time Limit to Notify," which requires organizations to notify affected customers within a given number of days, usually 30 or 45 days as opposed to the vague requirement, or as quickly as possible and without unreasonable delay.

Where there provisions that increased the risk of identity theft?

We found three provisions associated with higher identity theft. Two of these provisions, Risk of Harm and Baseline Encryption Exemption, could make it easier for organizations to legally avoid disclosing a data breach. If an organization misinterprets the risk of harm from a breach and chooses not to notify victims, then preventable identity theft may occur. Likewise, if an organization with a weak encryption system does not notify victims, then the breach's perpetrators may be able to decrypt the stolen data and consequently steal identities.

For more information about this subject,
read "Data Breach Notification Laws" by Richard J. Sullivan and Jesse Leigh Maniff at www.KansasCityFed.org/publications/research/er.

BY MICHELE WULFF

Learning through Lending: Kids as Angel Investors

Most kids don't have a clue about investments and their importance to overall financial health. A few may have heard of investing in the stock market, but their knowledge is generally limited. So how can we introduce the concept of investing in a way that engages kids' interest and promotes interactive experiences? I suggest sharing the concept of angel investing and encouraging them to actively participate as "angels" who invest in business startups of Third-World entrepreneurs.

Angel investors are individuals who provide financial backing or seed funding for startups or entrepreneurs in return for ownership equity or debt repayment. Many of these investors are wealthy entrepreneurs or business owners who remember how difficult it was to get their own venture going. Now that these investors are successful, they want to assist others who need financial help in order to reach their entrepreneurial dream.

Since kids don't have the capital to make large investments, they can become angel investors of another sort. By sponsoring microloans to Third-World entrepreneurs for use in starting small businesses, kids can truly make a difference in the lives of others by helping them become self-sufficient.

A great way to introduce microlending to younger kids is by sharing the book *One Hen: How One Small Loan Made a Big Difference* by Kate Smith Milway. The book tells the story of a boy from Ghana named Kojo who buys one hen, which in turn lays eggs and hatches more hens, until he becomes the largest chicken farmer in the country. Kojo then begins to help others start their own small businesses. The book is inspired by the true story of Kwabeno Darko of Ghana and is motivational to read.

To familiarize kids with the lending process, start by defining "microloan" as a small amount of money lent by an individual (rather than a bank) to a business startup or self-employed person. This small loan helps the entrepreneur buy capital resources, or goods made and used to produce other goods and services. Once these resources are purchased, the entrepreneur can begin to develop their product, such as jewelry, clothing or soap, to sell in the marketplace. Or they may use their loan to buy seeds and fertilizer to grow vegetables, or raise chickens or sheep to sell. Once the entrepreneur's business becomes successful, they will earn a profit or extra income after paying production costs. The microloan will be repaid to investors through this extra income.

There are a number of websites that match entrepreneurs with microlenders. For example, Kiva (http://www.kiva.org/) is an organization with a mission to alleviate poverty by connecting people through lending. This nonprofit currently has 1.5 million lenders who have loaned $838,000 to entrepreneurs in 84 countries. Anyone can invest and can begin with loans as small as $25. The investor, or microlender, can choose who to lend to by viewing the entrepreneur profiles posted on the website. Once an investor has identified a borrower to support, he or she can decide on an amount to lend. Kiva field partners in the borrower's country receive that money through wire transfer. The partners disburse the money accordingly and collect repayment to send back to Kiva. Kiva does not charge entrepreneurs interest or pay interest to their lenders. The microloan repayment rate is approximately 98 percent within two to three years. Lenders can choose to have their repayment deposited in a PayPal account, use it to fund another borrower, or donate a portion to Kiva to cover operating expenses.

Another nonprofit in this field is Zidisha (https://www.zidisha.org), which is Swahili for "grow or expand." This microlending community connects lenders and entrepreneurs directly without a "middleman" or field partner. Investors can deposit a microloan amount of one dollar or more in a Zidisha account, which is then transferred via mobile phone payment directly to the entrepreneur. Lenders can communicate person-to-person with the borrower using the "Discussion" tab on the profile page to receive project updates on the business. Volunteer mentors or interns are available in the entrepreneur's region to monitor or assist them with their startups. Once the entrepreneur is successful, repayment can be made in weekly or monthly installments into the lender's account. These funds can be withdrawn or reinvested in new loans.

A necessary part of teaching kids about microloans is discussing the possibility of a loan default, when the borrower does not repay due to business difficulties or personal issues. An important point for kids to understand is whether they think the rewards of investing outweigh the risks. Although many organizations, such as Kiva and Zidisha have people who work to ensure borrowers repay loans there's always a possibility of default.

One thing to discuss with kids is the satisfaction they will receive from helping others achieve their goals is worth the investment. The "feel good" emotions that they will experience from the microloan process may incentivize them to continue their philanthropic interests long into the future.

Editors Note: Michele Wulff has offered practical advice on how to educate young people on personal financial matters since the column's inception in 2009. This is her final column for the magazine. Wulff retired from the Kansas City Fed in June after almost a decade of service as an economic education coordinator. Actually, this is her second retirement. She came to the Bank after working 30 years as a public school educator. She also is a recipient of the national peer award "Excellence in Teaching Economics." The TEN editorial staff will miss her experience, expertise and candid insight.

Financial Education Resources

The Kansas City Fed is committed to promoting economic and financial literacy and greater knowledge of the Fed's role by providing resources for teachers, students and the public. Visit our website at **KansasCity-Fed.org** for more information. The resources below are a few of many available on the subject.

FEDERAL RESERVE RESOURCES

"One Hen: How One Small Loan Made a Big Difference"

This activity's questions can be used after discussing the book's content and the story's purpose see book under "Fiction Books". For ages 5-8. www.stlouisfed.org/education/parent-resources/one-hen-how-one-small-loan-made-a-big-difference-q-and-a

"Common Cents: Paying It Forward: Kids as Philanthropists"

This article discusses how to develop philanthropy in kids by introducing them to charitable organizations they can help through donation. For all ages. www.KansasCityFed.org/publicat/education/teachingresources/Common-Cents-Fall-2012.pdf

FICTION BOOKS

"One Hen: How One Small Loan Made a Big Difference"

by Kate Smith Milway

A young boy buys a hen, which lays eggs and hatches more hens, until he becomes the largest chicken farmer in Ghana. For ages 5-8.

One Hen Inc.

This related website has resources to introduce kids to social entrepreneurship as well as personal finance and global awareness. www.onehen.org/resources.html

NON-FICTION BOOKS

"Beatrice's Goat"

by Page McBrier

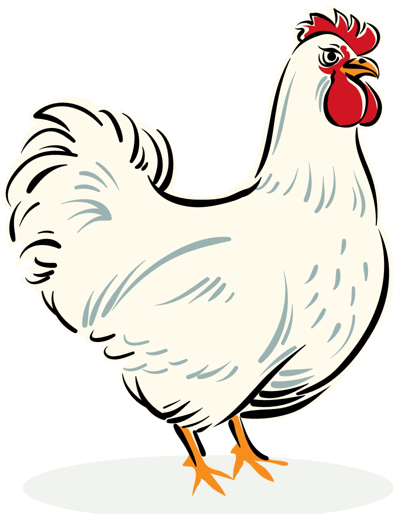
A true story about an African girl who receives a goat as a gift through Heifer International and sells its milk to get the money needed to attend school. For ages 5-8.

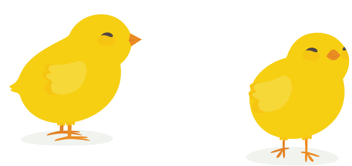
"Banker to the Poor" by Muhammad Yunus

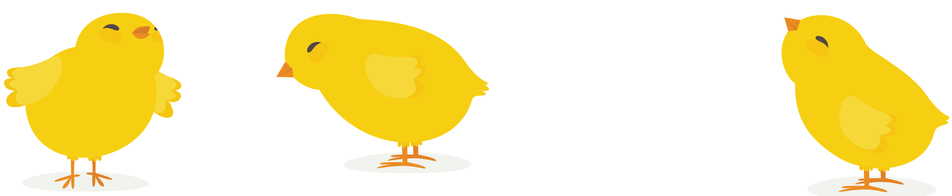
Memoir of the Nobel Peace Prize-Winner and founder of the Grameen Bank, which began the microfinance revolution. For Adults.

"The International Bank of Bob" by Bob Harris

Bob begins micro lending and follows his loans to their destinations around the globe. For Adults.







Microlending decisions: Answer the questions below to choose which entrepreneur you would like to support.

1 Would you like to help a male or female entrepreneur? Male Female Either

2 Is there a continent or country you would like to support? ____________________

3 What type of small business would you like to focus on?

❑ agriculture ❑ art ❑ clothing ❑ food ❑ health

❑ housing ❑ services ❑ transportation ❑ other ____________

4 How much would you like to donate? $ ______________

Choose a microloan organization and read the profiles to find a borrower who matches your decisions above. Record information on the entrepreneur you choose below.

My Entrepreneur's Profile:

Name of Borrower: ______________________________

Country: ______________________________

Small Business Description: ______________________________

Amount Needed for Business: $ ______________________________

Percent Currently Funded: ____________ %

Still Needed: $ ____________

I Loaned: $ ____________ on ____________ (Date)

Board meeting in New Mexico gives directors firsthand glimpse of economy

The Boards of Directors of the Federal Reserve Bank of Kansas City and its Denver Branch had a off-site board meeting in Albuquerque, N.M., May 11-12. Every year, the Board has at least one meeting in cities throughout the Tenth District to learn more about the regional economy. The goal is to help members better understand the issues affecting local business and the community. During the visit, the Boards met with several organizations, including:

- Albuquerque International Balloon Fiesta
- Anderson-Abruzzo Albuquerque International Balloon Museum
- City of Albuquerque's Film Office
- Dion's Pizza
- Sandia Peak Tramway

The Board of Directors heard about how the economy affects business owners; what they do to resolve these issues; what they experienced during the recent recovery; and thoughts for future economic growth.

At the conclusion of the meeting, President Esther George spoke at a luncheon for approximately 240 business and community leaders about longer-term labor market trends, the economic outlook and an update on monetary policy.

John Chavez (left), managing director of New Mexico Start-Up Factory, spoke to Kansas City Fed directors during the Board's meeting at the Hotel Albuquerque. Denver Branch Board directors (top center) Richard Lewis and Margaret Kelly participated in a tour of New Mexico businesses. Kansas City Board directors (bottom center) Len Rodman, left, and Jim Farrell, far right, attended the board meeting in New Mexico. Farrell's wife, Jean, is pictured in the center. Steve Maestas, chair of the Kansas City Fed Board of Directors, addressed a group of Albuquerque community leaders.

PHOTOS BY GARY BARBER

Research begins at Census Research Data Center housed in Kansas City Fed

The Kansas City Census Research Data Center (RDC) is now open for business. The center, located in the Federal Reserve Bank of Kansas City, was established through a consortium comprised of the Kansas City Fed, the Kauffman Foundation, the University of Kansas, the University of Kansas Medical Center, the University of Missouri-Kansas City and the University of Missouri. The data center, which opened in February, is one of 24 RDC locations across the country that provide approved researchers with secure access to restricted micro-level U.S. Census data.

The U.S. Census Bureau has hired an administrator for the center, Josephine Lugovskyy, who is responsible for providing feedback for researchers in the proposal development process and ensuring that researchers follow appropriate procedures when working on approved projects.

The process to gain access to the Census RDC can be lengthy, with proposals requiring as long as six months for approval. Once a proposal has been approved, the researcher is screened through the Census Bureau, and if he or she qualifies, will be granted Census Special Sworn Status.

Lugovskyy, an economist, is currently working with four researchers using the center for approved projects related to health data. Additional proposals are expected by fall.

Kansas City Fed Vice President and Economist Jonathan Willis, co-executive director of the RDC along with Edith Gummer, research director in education for the Kauffman Foundation, hopes the RDC will engage new researchers through collaboration with local universities and consortium members.

"We want researchers to take advantage of this great opportunity to enhance their work using Census data," Willis said.

Josephine Lugovskyy

Census RDC data are used to produce aggregated measures such as personal income, consumer spending, corporate profits and employment. Research using the microdata underlying the aggregate measures can provide a much better understanding of the Tenth Federal Reserve District and the national economy, including analysis of cyclical and structural changes that are affecting businesses and households.

"The presence of the data center complements the Kansas City Fed's reputation throughout the research community as a hub for hosting large datasets and providing advanced computing resources for researchers," Willis said.

The research data center program is administered by the Census Bureau's Center for Economic Studies. More information about the RDCs is available at https://www.census.gov/ces/rdcresearch and https://www.census.gov/about/adrm/fsrdc/locations/kansas-city.html

Math X Economics program encourages high school students to develop economics, math skills

Throughout the course of a year, the Federal Reserve Bank of Kansas City hosts hundreds of groups and programs aimed at promoting financial education. During the spring, the Kansas City Fed hosted Math X Economics to help build awareness of careers in the field of economics for high school students.

This is the third time the Kansas City Fed has hosted the event, which includes a variety of sessions and presentations developed by economists and research associates as well as talks led by Bank President Esther George and Research Director and Senior Vice President Troy Davig. High school sophomores, juniors and seniors from Kansas City, Mo., and Kansas City, Kan., public schools attended.

"Our goal is to foster a better understanding of economics and appreciation for its role in your life," Assistant Vice President Bob Hampton of the Kansas City Fed told the group. "Economics is one avenue that we want you to take some time and explore. Who knows—you may have a passion for it. "

George urged students to consider their educational and future career options, including the way an interest in math can shape a career.

"When I was a student, math was an area where I was pretty good, but I thought I would never use it in my career," she said. "Today, everything I do involves math. I understand it as a sort of a language that we all need to know."

George outlined how students' choices in school will help them determine their career course.

"I encourage you to study hard and work hard in school," she said. "I hope someday you will all come to a place like the Federal Reserve Bank to help us solve the problems we face every day. I hope one day I'm coming down the hall and I see you working here."

Students also heard from Thealexa Becker, an assistant economist at the Kansas City Fed, who shared real world applications of economics, including studies of sleep on workforce productivity and an in-depth study of movie ticket prices and factors that influence them. Malachi Hibler, a junior at Washington High School, said he found the presentation to be the most memorable experience of his day.

"Just thinking about economic aspects of how the science can be used was really interesting," he said. "I like that I can learn more about this outside of the classroom. These are concepts I can apply in school and share with other people."

The program included two sets of panelists who shared how their career paths were influenced by economics. The students got a chance to speak with them one-on-one as the speakers visited the tables. Additionally, the students toured the Money Museum and participated in a game activity led by Kansas City Fed employees Mike Redmond, associate economist, and Will Xu, a research associate, which allowed them to solve an array of math, economics and logic puzzles to earn points.

Mario Barnes, an educator at Ruskin High School, accompanied the group from his school and appreciated the experience offered by the program.

"I want them to learn more about corporate culture and get an idea of the careers available out there," he said. "Through programs like this, they have been exposed to more than your average student."

Davig's remarks concluded the event and he shared his educational and career path with students. He echoed the importance of understanding mathematics as its own language.

"I took lots of graduate-level mathematics and so much of it is proper notation," he said. "Ultimately, it's just a language. If you can learn a new language, you can certainly learn math."

He outlined the ways that math is central to succeeding in life, in ways such as saving for living expenses, managing credit and using income wisely. He encouraged students to nurture strong math skills to help them obtain an interesting career.

"Someday you'll come into work and you can work on what you're interested in," he said. "In an institution like this you can have a pretty profound impact."

Vilmer Alvarado, a junior at J.C. Harmon High School in Kansas City, Kan., was impressed by the message from Kansas City Fed leaders and their encouragement to study math and economics.

"It's so nice to hear that you can be a strong math student even if you struggle with one area," he said. "I know more about the branches of economics and all of the jobs available. Now I'm really interested in economics."

Learn more about the Bank's economic education resources at: https://www.kansascityfed.org/education.

PHOTOS BY BRETT SMITH

ASSISTANT VICE PRESIDENT BOB HAMPTON with Economic Research speaks with students about the field of economics and its role at the Kansas City Fed.

Notes from around the Tenth District

Bank publishes new edition of bank directors resource book

The Federal Reserve Bank of Kansas City Bank understands the important role directors have in the leadership and oversight of their institutions, and has consistently found a strong correlation between overall bank health and the level of director engagement.

With a goal of helping both directors and banks succeed, the Kansas City Fed began producing *Basics for Bank Directors* after the banking crisis of the 1980s—a time when many in bank supervision saw firsthand the critical oversight role that a board of directors can play. Although banking and the financial system have changed much since that time, the connection between director engagement and a bank's stability remains.

The new edition of *Basics for Bank Directors* will help directors better understand their role in an banking climate that includes increased competition from other financial service providers, increased regulatory compliance requirements, financial and technological innovations coupled with cybersecurity and third-party vendor concerns, and economic swings that have made it difficult for bank management to steer a consistently profitable course. In addition to these issues, legal changes and court actions have placed greater responsibility and accountability on bank directors.

As the future unfolds, outside directors will play an increasingly important role in guiding their banks and serving as unbiased judges of their banks' operational performance. *Basic for Bank Directors* serves as a guide and provides directors with the basic knowledge of banking and what to consider in overseeing a bank.

To order a print copy or to download a digital version of the Basics for Bank Directors, go to www.bankdirectorsdesktop.org/basics-for-bank-directors.html.

Bank Anniversaries

The following banks in the Tenth Federal Reserve District are celebrating one, five, 10, 20 or more years as Federal Reserve members in July, August and September.

Uinta Bank	Mountain View	Wyo.	96
Wahoo State Bank	Wahoo	Neb.	84
Gunnison Bank and Trust Co.	Gunnison	Colo.	76
Farmers State Bank	Stanberry	Mo.	75
Union State Bank	Clay Center	Kan.	74
Bank of Holyrood	Holyrood	Kan.	73
Farmers Bank of Lincoln	Lincoln	Mo.	72
Security State Bank	Basin	Wyo.	68
Bank of Cushing	Cushing	Okla.	36
My Bank	Belen	N.M.	24
Farmer's State Bank	Wallace	Neb.	20
Cornerstone Bank	York	Neb.	10
City Bank & Trust Company	Guymon	Okla.	1

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The Federal Reserve System

Congress created the Federal Reserve in 1913 to bring financial stability after a number of banking panics. It is the nation's third central bank. The first, established in 1791, and the second, created in 1816, were each operational for 20 years. In both cases, its charter failed to be renewed and the banks closed.

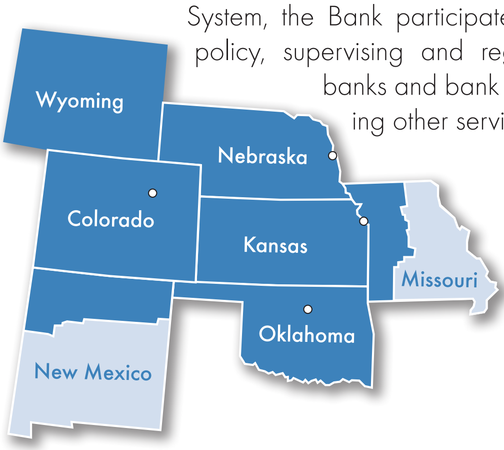
With the Federal Reserve Act, Congress sought to create a central bank the public would be more likely to support by making it "decentralized" with more local control. This new structure was designed to overcome one of the primary weaknesses of the previous central banks: public distrust of an institution that many felt could potentially be under the control of either government or special interests. The new central bank is a network of 12 regional Federal Reserve Banks, located throughout the country and under the leadership of local boards of directors, with oversight from the Board of Governors in Washington, D.C., a government agency.

The Federal Reserve is considered to be independent within government and broadly insulated from political pressures. While members of the Board of Governors are nominated by the president of the United States and confirmed by the Senate, the Federal Reserve's regional structure, including local boards of directors and advisory councils, ensures that views from a broad spectrum of the public nationwide contribute to the central bank's deliberations.

President Woodrow Wilson signed the Federal Reserve Act on Dec. 23, 1913, and the 12 regional Federal Reserve Banks opened on Nov. 16, 1914.

The Federal Reserve Bank of Kansas City

The Federal Reserve Bank of Kansas City and its Branches in Denver, Oklahoma City and Omaha serve the Tenth Federal Reserve District, which encompasses Colorado, Kansas, western Missouri, Nebraska, northern New Mexico, Oklahoma and Wyoming. As a part of the Federal Reserve System, the Bank participates in setting national monetary policy, supervising and regulating numerous commercial banks and bank holding companies, and providing other services to depository institutions.



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CHANGE SERVICE REQUESTED

Kansas City Fed releases sixth edition of

BASICS *for* Bank Directors

Basics for Bank Directors is published by the Federal Reserve Bank of Kansas City as a reference guide for today's commercial bank directors. Now in its sixth edition, this publication details the processes and procedures for promoting stability, growth and success of banks in today's economic and regulatory environments. To order a print copy or to download a digital version, go to *www.bankdirectorsdesktop.org/basics-for-bank-directors.html.*