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Insights on economic issues in today's headlines



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REGIONAL ECONOMIST

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Reflections on Crisis to Recovery

My 10-year anniversary as president and CEO of the Federal Reserve Bank of St. Louis seemed like an appropriate time to reflect on the lessons learned over this period, which has been anything but ordinary.¹

By the time I stepped into this role in April 2008, the financial crisis was already underway. The Federal Open Market Committee (FOMC) reacted by lowering the policy rate (i.e., the federal funds rate target) several times in late 2007 and early 2008. In March 2008, the rescue of Bear Stearns showed that the crisis had entered a new—and a more difficult—phase.

During the summer of 2008, there was still a case to be made that the U.S. economy would muddle through the crisis. However, the doubling of oil prices since the summer of 2007 contributed to slower economic growth during the second half of 2008. With the collapse of Lehman Brothers and AIG (American International Group) in September 2008, the crisis was in full swing.

In response, the FOMC lowered the policy rate further, hitting the so-called zero lower bound in December 2008. The rate remained near zero for seven years. In my view, the most important element of this whole era has been encountering the zero lower bound and then trying to decide what to do, if anything, given that interest rates could not be reduced further in response to poor economic conditions.

The crisis ultimately changed the nature of how we think about central banking and how a central bank should conduct monetary policy at the zero lower bound.

Against this backdrop, some of the key themes and policy positions over my first 10 years as St. Louis Fed president are briefly discussed below:

1) The limits of fiscal policy: Once the policy rate hit the zero lower bound, calls for fiscal approaches to stabilization policy gained popularity. However, the FOMC was not out of ammunition; it turned to quantitative easing (QE) and forward guidance. In a 2012 paper, I argued that stabilization policy should be viewed the same way after the

crisis as it was before—monetary policy should still be used to respond to short-term fluctuations in the economy.

2) Fear of a deflationary trap: Many inflation measures were low and declining in 2010. During that summer, I released a paper that concluded the best course of action for turning inflation around—thus avoiding a Japanese-style deflation—was to implement QE. The FOMC implemented its QE2 program in November of that year.

3) QE3—data-driven, not date-driven: As early as 2009, I had advocated for balance sheet policy to be state-contingent and adjusted depending on economic conditions.² While QE1 and QE2 were associated with fixed end dates, the FOMC's QE3 program was open-ended—a form of state contingency. The end of QE3 depended on certain labor market conditions being met.

4) A preferred approach to normalization: Monetary policy normalization began in December 2015 with “liftoff” of the policy rate. The FOMC chose to raise the policy rate before starting to shrink the balance sheet, but I favored the opposite sequence—a last-in, first-out approach. Choosing liftoff first has forced the FOMC to raise the policy rate in a world of superabundant reserves, causing the Fed to adopt new operating procedures for raising interest rates.

5) A regime-based view of the economy: At the St. Louis Fed, we changed our approach to near-term forecasts of the macroeconomy and monetary policy in June 2016. We now assume the macroeconomy could switch between regimes (or steady states) and, therefore, could have a set of possible long-run outcomes. Projections for monetary policy are calibrated for the current regime.

6) A push for more transparency: Improving Fed communications became a central focus of the FOMC during and after the financial crisis. Still, more can be done. One such improvement, which Fed Chairman Jay Powell announced this month, is a press conference after every FOMC meeting³ rather than the



current practice of after every other meeting. Another would be to replace the FOMC's Summary of Economic Projections with a quarterly monetary policy report that better explains the FOMC's actions and projections on a regular basis.

7) The road to an inflation target: The Fed lagged many other central banks in adopting an explicit inflation target. In early 2011, an ad hoc group of Federal Reserve bank presidents (five of us) drafted a one-page statement that not only would name an inflation target for the U.S. but would touch on other important issues. This proposed statement was similar to the one the FOMC adopted in January 2012.

8) Alternatives to inflation targeting: Central banking around the world has been primarily focused on inflation targeting as a way to keep inflation low and stable. Alternative approaches such as price-level targeting and nominal GDP targeting could be an improvement on inflation targeting and may be a wave of the future in central banking. ^{RE}

James Bullard, President and CEO
Federal Reserve Bank of St. Louis

ENDNOTES

¹ This column is based on the St. Louis Fed's latest annual report. See www.stlouisfed.org/annual-report/2017.

² State-contingent policy means reacting to economic events and not doing things according to the calendar.

³ The new approach will begin in January 2019.

Hispanics and Their Contribution to America's Human Capital

By Alexander Monge-Naranjo and Juan Ignacio Vizcaino



KEY TAKEAWAYS

- Hispanics are a growing share of the U.S. workforce. Yet they are more likely to work in lower-skill occupations than non-Hispanics.
- Data show that the education level of Hispanic workers lags behind that of non-Hispanic workers. This may explain the disparity in occupations.
- The country's aggregate productivity would improve if Hispanics could develop their talent and skills.

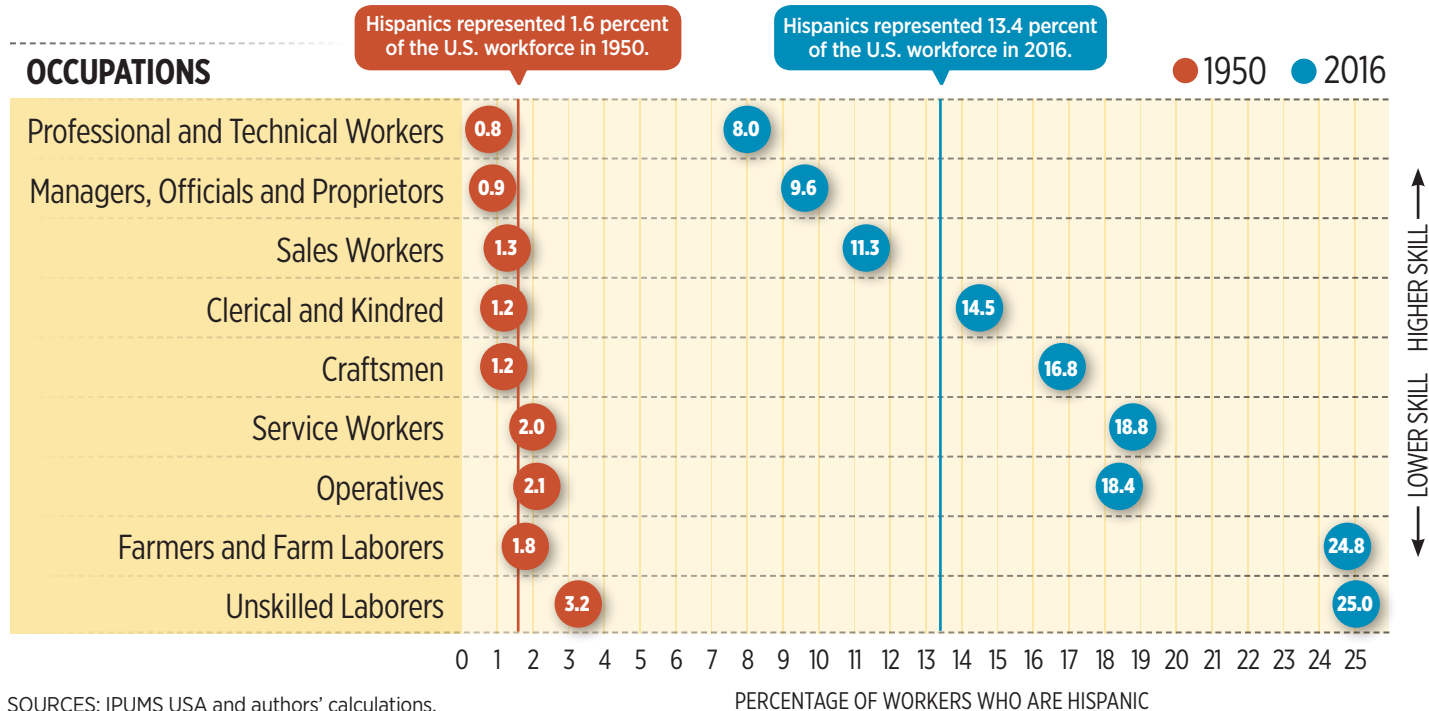
Immigrants and native-born Americans. Farmworkers and professionals. High school graduates and doctors. With backgrounds from Mexico to Chile. Much of this diversity is often ignored in the frequent discussion of the ever-rising weight of Hispanics in both the U.S. population and labor force. But the composition of the Hispanic population and labor force has been changing, in some areas dramatically, and a deeper understanding of these changes is needed to assess the contribution of Hispanics to the country's overall human capital.

In this article, we explore the transformation in the human capital of Hispanics and how these shifts have impacted their occupations and integration into the American workplace. We describe not only the substantial increase in the numbers but also the significant diversity and assimilation of Hispanic workers in the U.S., how they compare with their peers in terms of education, and their participation in different occupations. We also

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Figure 1

Hispanics have sharply increased their presence in all occupations, but they have an outsized share in lower-skill jobs



put emphasis on the presence of Hispanics in the higher-earning occupations and describe the increased role of Hispanic women in those occupations.

Our review of the data helps us elucidate and discuss some of the key challenges faced by the Hispanic population—if they are to fully assimilate and catch up with their peers in the U.S. labor force.

The Growing Hispanic Presence

We collected individual level-data on the age, gender, race, education level and current occupation of workers from a data set, IPUMS USA.¹ For simplicity, we grouped workers into two bins: Hispanics and non-Hispanics, according to their self-reported characterization. From these data, we found that the percentage of U.S. residents who identify themselves as

Hispanic or Latino have grown dramatically—more than eight times—within the last seven decades. Hispanics represented a mere 1.9 percent of the population in 1950, compared to almost 16 percent in 2016.

The fastest growth is between 1970 and 2000, when the percentage more than tripled—from 4 percent in 1970 to 12.3 percent in 2000. After 2000, the growth has remained substantial, but has been much slower. Very similar numbers hold when we restrict attention to the working-age population. As with the overall population, the percentage of Hispanic workers grew by a factor greater than eight, from barely being just 1.6 percent (1 in 63) in 1950 to being 13.4 percent (1 in 7.5) in 2016.

The IPUMS USA database can be used to classify workers according to 11 educational attainment categories.

ABOUT THE AUTHORS

Alexander Monge-Naranjo (left) is an economist and research officer at the Federal Reserve Bank of St. Louis. His research interests include growth and development, labor and applied contract theory. He joined the St. Louis Fed in 2012. Read more about the author and his research at <https://research.stlouisfed.org/econ/monge-naranjo>.

At the time this was written, **Juan Ignacio Vizcaino** was a technical research associate at the Federal Reserve Bank of St. Louis. He is currently a Ph.D. student in economics at Washington University in St. Louis.



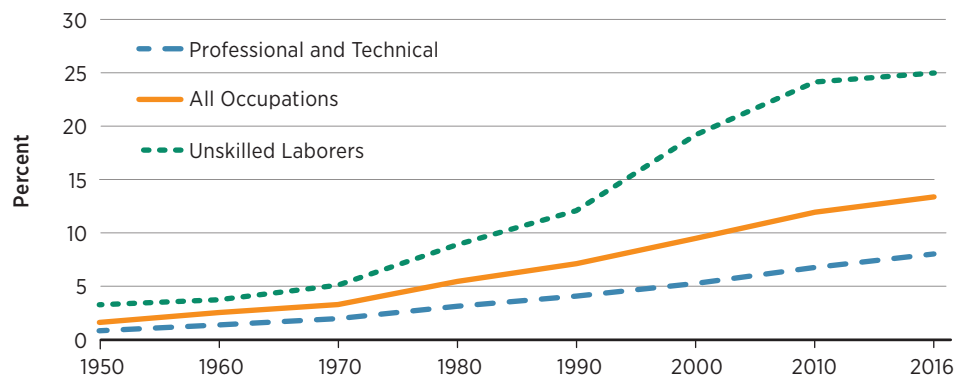


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As of 2016, about 1 in 20 Hispanic female workers were professionals compared to only 1 in 30 for the males.

Figure 2

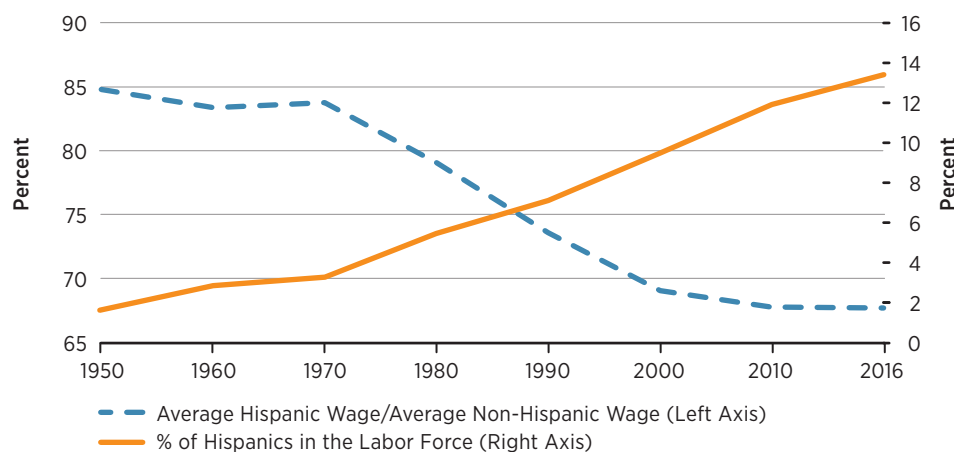
Participation of Hispanics across Occupations



SOURCES: IPUMS USA and authors' calculations.

Figure 3

Hispanic Workers: Relative Wages and Labor Share



SOURCES: IPUMS USA and authors' calculations.

For tractability, we grouped these categories into five broader groups: primary school or less (nursery school through eighth grade), secondary incomplete (ninth to 11th grade), secondary complete (12th grade), college incomplete (one to three years of college), and college complete or more (four or more years of higher education).

The data set also allows us to group workers according to broad occupational groups. Specifically, IPUMS USA uses the 1950 Census Bureau occupational classification, aggregating three-digit occupations into the following nine broad groups, ordered by their skill intensity:² professional and technical workers; managers, officials and proprietors; sales workers; clerical and kindred; craftsmen; service

workers; operatives; farmers and farm laborers; and unskilled laborers.³

Hispanic Workers across Occupations

We start by exploring the changes in what the Hispanic-American workers do in the marketplace. First of all, the presence of Hispanic workers has grown in all occupations. For each of the nine occupations available in IPUMS USA, Figure 1 (see page 5) shows the percentage of workers who identify themselves as Hispanic. In all the categories, the growth has been substantial—in some cases by much more than a tenfold growth in the participation of Hispanics—including in the highest paid occupations, i.e., professionals and managers, which we discuss further below.

A second key finding that is evident from Figure 1 is that the growth in the Hispanic participation across occupations has been far from uniform. Instead, it has been substantially inclined toward lower-skill jobs. Indeed, as of 2016, the participation of Hispanics in occupations such as service workers, operatives and, most strongly, farmworkers and unskilled laborers is much higher than their weight in the population and labor force. By contrast, the participation of Hispanics in professional occupations and managerial occupations and, to a lesser extent, sales occupations is substantially lower than in the aggregate of all occupations.

Figure 2 further illustrates these asymmetries, displaying the fraction of Hispanics in the occupations ranked top and bottom in terms of skills (i.e., professional and technical, and unskilled laborers), along with the overall Hispanic presence in the labor force.

The figure shows that these disparities not only are non-negligible but also have been growing over time. Accelerating first in 1970, when the Hispanic presence was growing the fastest, these disparities have increased even faster since 1990, when the Hispanic population growth was starting to slow down.

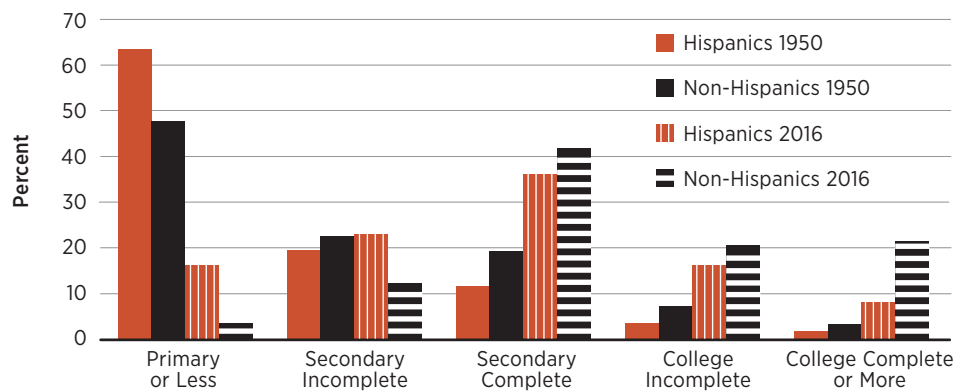
The end result of these asymmetric growth rates is that, for 2016, the last year in our sample, Hispanics were only 8 percent of professional workers, who are employed in highly paid occupations, while they accounted for 25 percent of unskilled laborers, which are occupations with much lower earnings.

The Education Effect

A number of obvious questions arise. The first one is the following: How does much of the growth directed toward lower-skill occupations translate into wages? It turns out quite a bit! In Figure 3, we display the behavior of the average wages of Hispanic workers relative to the wages of non-Hispanics. The figure clearly shows that the average wages of Hispanic workers have been substantially lower than those of non-Hispanic workers during the entire sample period. More interestingly, the figure also shows that this ratio has fallen substantially with the rise in the share of Hispanic workers, most notably from

Figure 4

Educational Attainment of Hispanic and Non-Hispanic Workers



SOURCES: IPUMS USA and authors' calculations.

NOTE: Educational attainment is defined by the following groups: primary school or less (nursery school through eighth grade), secondary incomplete (ninth to 11th grade), secondary complete (12th grade), college incomplete (one to three years of college), and college complete or more (four or more years of higher education).

1970 to 2000, precisely when the population of Hispanics grew the fastest in the U.S. For the later years, the ratio has settled to around two-thirds of the average wage for non-Hispanic workers.

The next obvious question is: What explains these large gaps? Education and skill formation in general is the No. 1 candidate for the driver. Indeed, Figure 4 shows the distribution of workers across levels of educational attainment for U.S. Hispanic workers (red) and non-Hispanic workers (black) for both 1950 and 2016. Each bar represents the percentage of the workers, Hispanics and non-Hispanics, in each education group.

We must first recognize the substantial progress in the educational attainment of both groups of workers. The most dramatic improvement can be seen in the drastic reduction of the population with primary education or less: While 63.5 percent of the Hispanic workers in 1950 had primary education as their highest level attained, this percentage plunged to only 16.4 percent in 2016. On the other extreme, the fraction of Hispanic workers with some college moved from 3.6 percent to 16.2 percent, while those who have at least completed college surged from 1.8 percent to 8.1 percent.

While substantial, the improvements in the schooling attainment of Hispanic workers are far from enough to catch them up with their non-Hispanic peers.

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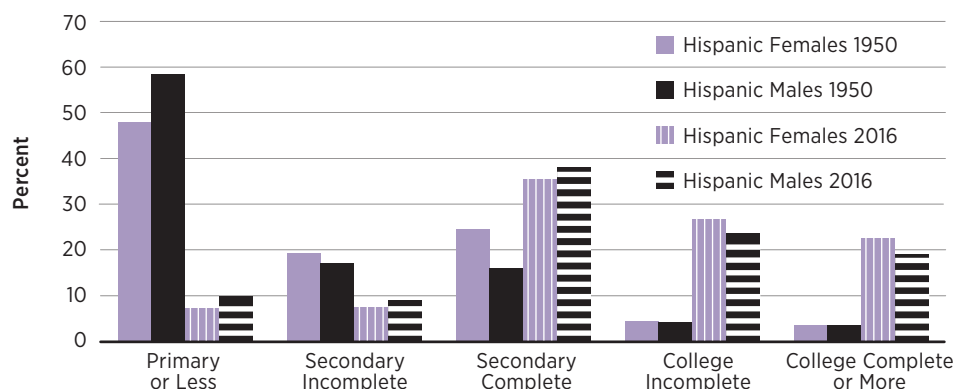


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As of 2016, the participation of Hispanics in occupations such as service workers, operatives and, most strongly, farmworkers and unskilled laborers is much higher than their weight in the population and labor force.

Figure 5

Educational Attainment of Hispanic Female and Male Workers



SOURCES: IPUMS USA and authors' calculations.

NOTE: Educational attainment is defined by the following groups: primary school through eighth grade, secondary incomplete (ninth to 11th grade), secondary complete (12th grade), college incomplete (one to three years of college), and college complete or more (four or more years of higher education).

Indeed, from 1950 to 2016, the fraction of non-Hispanics with no more than a primary education collapsed from 47.7 percent to just 3.6 percent. The fraction of non-Hispanics with some college surged from 7.2 percent to 20.6 percent, while the fraction with college completed or more jumped from 3.3 percent to 21.5 percent.

The Hispanic education gap can explain the lower earnings for two different reasons. First, as shown in Figures 1 and 2, workers with lower levels of schooling are more likely to end up in lower-skill occupations.

This form of assignment is simply driven by comparative advantage: Despite having lower productivity in absolute terms in all occupations, lower-education workers are relatively more productive in lower-skill occupations. By contrast, workers with a higher level of education may be more productive in all occupations, but their productivity would be relatively higher in higher-skilled occupations.

In these cases, the assignment of workers to jobs and occupations would exhibit positive sorting: Highly skilled workers would be assigned in higher proportions to higher-skilled occupations, and less-skilled workers would be assigned in higher proportions to lower-skill occupations. The IPUMS USA data clearly indicate that because of the group's lower

educational attainment, Hispanic workers in the U.S. have *comparative advantage* in those lower-skill occupations, as revealed by their underrepresentation in higher-skilled occupations (professionals, managers) and by their overrepresentation in lower-skill occupations.

The second mechanism by which education could explain why Hispanic workers earn less than their non-Hispanic peers would be that, despite both being in the same occupation, they earn less because of their inferior training and lower skills. That is, education determines not only the assignment of workers to an occupation but also their *absolute advantage* in each occupation.

We explored this second mechanism, using the same IPUMS USA data to control for the impact of observable factors such as age, education, gender and experience on the income of workers.⁴ Once we controlled for the other observable factors, we found that the earnings of Hispanics and non-Hispanics were fairly similar, even in the highest-earning occupations. Indeed, some gaps between Hispanics and non-Hispanics persisted after controlling for age and education, but the magnitude of those gaps was too small to account for much of the observed differences in the raw data.

In sum, the education gap of Hispanic workers relative to their peers in the U.S.

labor force is the key candidate factor driving the gaps in the occupations and earnings. The key question is: Why does the education level of Hispanics lag behind? Can this gap be accounted for by intergenerational persistence, given the fact that it may take a while for children of poorly educated immigrants to catch up with the rest of the population? In any event, policies aiming to improve the standing of Hispanics in the U.S. labor markets—and in general—are likely to fail unless they address the lower educational attainment of that population.

Gender Differences

We finish our exploration of the Hispanic labor force by looking at the evolution of gender differences over time. Figure 5 decomposes the educational attainment of Hispanics, showing separately the educational attainment of female and male workers in 1950 and 2016. The solid bars are for the year 1950, and the striped bars are for 2016. The lavender and black bars represent females and males, respectively.

The first fact observed in the figure is that both males and females have advanced substantially. In 1950, less than one-tenth of workers in both genders had at least some college education. By 2016, more than 40 percent of workers in both genders had at least some college education.

The second clear fact is that in both periods—and over the entire sample period—the educational attainment of Hispanic women is higher than the educational attainment of men. Indeed, men outnumber women in the groups of workers with an education in the lower categories: primary or less, secondary incomplete and secondary complete. Meanwhile, women outnumber men in the upper categories: college incomplete and college complete or more.

Can this gap between female and male Hispanic workers explain differences in their labor market experience? A formal answer is outside the focus of this article, but it will be the focus for an article in an upcoming issue of the *Regional Economist*. But a hint can be provided here: The data show that since 1980, female Hispanic workers have overtaken their male counterparts in professional and technical occupations. As of 2016, about 1 in 20 Hispanic female workers were

professionals compared to only 1 in 30 for the males. This trend is in line with the observed evolution for the overall population, as we detailed in our previous article in the *Regional Economist*.⁵

Conclusions

In this article, we explored the substantial shifts in the participation of Hispanic workers in the American labor force since 1950. We show that the presence of Hispanic workers has increased dramatically over these years, more than eight times. We also documented that the presence of Hispanics has increased in all occupations. However, we found big differences in their expansion across the different occupations.

In particular, we found that Hispanic workers are assigned in higher proportions to lower-skill occupations. To explain these findings, we argue that the education of Hispanic workers lags behind that of non-Hispanic workers, so the observed pattern is consistent with recent assignment models, in which workers choose occupations on the basis of their comparative advantage (e.g., Costinot and Vogel).⁶

The data suggest that the observed disadvantages of Hispanic workers in the U.S. labor markets do not seem to be the result of labor market frictions, e.g., sheer discrimination or lack of information. Once we control for education, age and gender differences, the Hispanic/non-Hispanic gaps mostly disappear. Instead, the factor holding back Hispanic workers in the U.S. seems to be their educational attainment.

To be sure, progress has been made there, but the Hispanic population is still lagging behind the rest of workers. Regardless of the reason why Hispanics remain behind, the aggregate productivity of the country would improve if that source of talent and skills is fully developed and exploited.⁷

Finally, we found that women have advanced at a faster pace than men have. The patterns for Hispanic females are in line with the findings for all the workers in general.⁸ **RE**

Research assistance was provided by Hee Sung Kim, a senior research associate, and Qiuhan Sun, a research associate, both at the Federal Reserve Bank of St. Louis.

(This article was published online June 27.)

ENDNOTES

- ¹ See IPUMS USA, University of Minnesota, www.ipums.org. We discard individuals whose employment status is unknown, and those who are unemployed or not in the labor force, as classified by the variable EMPSTAT codes 0, 2 and 3.
- ² Skill intensity is measured by the percentage of workers in an occupation with the highest year of school degree completed in 1950 being college or more. Thus, the higher the percentage of workers in an occupation with at least a college degree in 1950, the more skill-intensive an occupation is. The order of the top four occupations is preserved if we use 2016 instead of 1950 to measure skill intensity.
- ³ Observations of individuals with unclassified, missing or unknown occupations are discarded.
- ⁴ This is what is known in the literature as “Mincer” regressions.
- ⁵ See Monge-Naranjo and Vizcaino, 2017.
- ⁶ See Costinot and Vogel.
- ⁷ This point is forcefully made by Hsieh et al.
- ⁸ See Rendall.

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Housing Costs and Regional Income Inequality in China and the U.S.

By Brian Reinbold and Yi Wen



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KEY TAKEAWAYS

- Living standards within a country can vary greatly due to differences in regional housing costs.
- Adjusting income by regional housing prices provides a better picture of income inequality.
- When accounting for housing prices, the degree of inequality among China's provinces improves. For U.S. states, this measure of inequality worsens.

Measuring income inequality has long been a key focus in welfare economics. Economists have documented that income inequality has increased in virtually all advanced economies, but it has remained mixed for developing and emerging economies.¹

However, solely looking at income tells only part of the story about the difference in people's living standards because income does not reveal information about the cost of living. For example, housing prices can vary tremendously across a nation; they also vary based on urban, suburban and rural geography.

Since housing typically takes a large share of an individual's income and living space is one of the most important and scarce commodities, housing prices can greatly affect living standards. In other words, the purchasing power of a dollar is not the same across regions due to variations in the cost of living, especially housing. Therefore, factoring in cost of living can yield fruitful insights about true inequality.

In this article, we look at regional per capita disposable income data for China, a developing nation, and the U.S., an advanced economy, to see how income inequality compares between two large countries with a substantial income gap.

Disposable income is income less taxes, which is the income an individual has

available for consumption. Looking at regional data will also allow us to see how income varies across a geographic region. Note that we are using regional per capita disposable income within a country, which allows us to characterize the degree of inequality for a region's average household in relation to different regions. Thus, we are unable to say anything about inequality across individuals.

We will then adjust regional average income by housing prices in a region to see how that affects inequality in living standards.

We calculate the Gini coefficient for each country using each region's per capita disposable income to measure income inequality. The Gini coefficient takes values between 0 and 1. A value of 1 indicates maximum inequality, while a value of 0 means perfect equality. Since we are using average income in a region, the Gini coefficient will be less than if we were using each individual's own income in each country.²

Per Capita Disposable Income

First, we look at per capita disposable income by province and the municipalities of Beijing and Shanghai for China (excluding Hong Kong and Taiwan). Income tends to be concentrated along the rapidly developing eastern coast, especially in the municipalities of Beijing and Shanghai. Both municipalities have the highest average per capita disposable income, at just under 50,000 yuan. (The exchange rate is about six yuan per dollar.)³ The innermost provinces in western China, Gansu and Xizang, have the lowest per capita disposable income, at around 12,000 yuan. The highest regional income per capita is four times greater than the poorest. The cross-regional average of per capita disposable

income is about 22,000 yuan, and the cross-regional median of per capita disposable income is about 18,600 yuan. The Gini of cross-regional income per capita is 0.19.

Now looking at U.S. states and the District of Columbia (D.C.), we see a similar but less pronounced skew in income distribution. The richest region is D.C., with per capita disposable income of around \$63,000. The poorest state is Mississippi, with per capita income of around \$32,000. In the U.S., the highest regional income per capita is two times greater than the poorest. This is less than half of the difference in China. The cross-regional average of per capita disposable income is \$42,027, the cross-regional median of per capita disposable income is \$40,829, and the cross-regional Gini of per capita disposable income is 0.08.

We see that regional income inequality is much greater in China than in the U.S. The Gini coefficient in China is more than twice as large as that in the U.S.

China's rapid development has contributed to inequality so far, but the historical experience of the U.S. suggests that China's regional inequality may start to shrink as China further develops.

Adjusting Regional Income by Regional Housing Prices

Since housing usually represents a large portion of consumer expenditures, housing prices can greatly affect a household's living standards. Although it may not account for most of consumption, it is the most important component of spending.

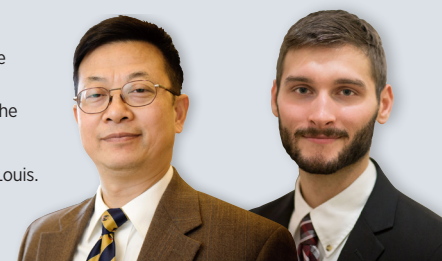
For example, given a certain income, a person could afford either a small apartment in New York City or a large, single-family house in St. Louis.

Because most daily consumption goods

ABOUT THE AUTHORS

Yi Wen is an economist and assistant vice president at the Federal Reserve Bank of St. Louis. His research interests include macroeconomics and the Chinese economy. He joined the St. Louis Fed in 2005. Read more about the author and his research at <https://research.stlouisfed.org/econ/wen>.

Brian Reinbold is a research associate at the Federal Reserve Bank of St. Louis.



are tradable and mobile across a country through a nationwide grocery market, the cost of living in terms of daily consumption goods does not change dramatically across regions. However, housing is a specially localized good, and it is not tradable or mobile. Therefore, the main source of the cross-regional difference in living standards comes from the difference in housing prices rather than grocery prices, even if grocery consumption accounts for a larger proportion of consumer spending.

In addition, housing prices have increased both in the U.S. (except during the recent financial crisis) and in China, so people's living standard—the purchasing power of their income—must have changed in recent years. To measure this effect, we use regional housing prices to adjust per capita disposable income. Notice that cross-country comparison is meaningful in our context only if we use nominal housing prices instead of a housing price index.

In 2015, housing on average accounted for about 22 percent of consumption expenditure in China,⁴ and it represented about 33 percent of household expenditure in the U.S. in 2016.⁵ We used housing prices of over 100 Chinese cities to construct regional housing price levels. The average price of new housing across China's provinces is 855 yuan per square foot, and the median price is 649 yuan. Home prices in the most expensive city, Shanghai, are nearly nine times greater than in the least expensive province, Shaanxi.

For the U.S., we look at Zillow's median house listing price by state for a mix of new and existing homes by state. The cross-regional average is \$143 per square foot, and the median price is \$124. The price of housing in D.C., the most expensive region, is over five times higher than home prices in Indiana, the least expensive state.

Housing prices are unequal across regions in both China and the U.S., but the disparity is greater in China. Interestingly, regions with high per capita disposable income also tend to have high housing prices. This suggests that, everything else being equal, a high-income region does not necessarily have a high living standard when the cost of housing is taken into account.

To create a measure of living standard, we adjusted disposable income by housing prices for both China and the U.S. Namely, we divided the regional nominal per capita disposable income by its respective

Gini Coefficients: China and the U.S.

	2015 Regional Per Capita Disposable Income	2015 Regional Housing Prices	2015 Regional Standards of Living*
Gini in China	0.19	0.30	0.16
Gini in U.S.	0.08	0.21	0.12

*A region's per capita disposable income adjusted by its average housing price

SOURCES: National Bureau of Statistics of China, U.S. Bureau of Economic Analysis, China Index Academy/Soufun, Zillow, Haver Analytics and authors' calculations.

regional housing price in each region.

Across China's provinces, the standard of living varies much less than income alone. The province with the highest living standard is Shaanxi, and the province with the lowest living standard is Hainan.

Indeed, the Gini for living standard is 0.16. This is less than the previous measure based solely on disposable income in China, suggesting improved distribution and equality. Municipalities with seemingly high income (Shanghai and Beijing) now have low standards of living in terms of housing affordability.

In the U.S., however, inequality in living standard actually increases across states. The Gini is 0.12, which is over a 40 percent increase compared to the Gini in disposable income. Indiana is now the "richest" state in terms of living standard, and Hawaii is now the "poorest" state in terms of living standard, or housing affordability. The living standard is about 4.5 times greater in Indiana than in Hawaii. Much of this inequality is driven by states where high home prices greatly reduce living standards relative to the median of states.

One caveat is that not everyone is a homeowner. So alternatively we could use the absolute rental cost in each region to adjust regional average disposable income to capture the renter population's inequality. But to the extent that rental cost is proportional to housing prices, our measure of living standard may not change dramatically if disposable income is adjusted by rental cost instead.

Conclusion

Adjusting income by cost of living can provide useful insights about living standards because, ultimately, household income means only as much as the purchasing power of that income. Yet the cost of living is not equal across regions, especially with respect to nontradable and nonmobile consumption goods such as housing. People in high-income regions may have to pay a disproportionately higher cost to enjoy the

same consumption bundle.

We see that regional inequality is substantially less severe in the U.S. than in China when considering only disposable income. However, this gap in inequality between the two countries shrinks significantly once regional variations in the cost of housing are taken into account.

In terms of purchasing power of income on nontradable goods like housing, the cross-regional inequality in China is not much more extreme than that in the U.S., although housing is much more affordable in the U.S. than in China—thanks to much higher per capita income and significantly more arable land in the U.S.

Still, this gap in per capita income remains enormously large. It will take China 60 years—about two generations—to erase the difference, assuming the country can maintain a growth rate that is 4 percentage points higher than the U.S. rate during that time. **RE**

(This article was published online June 8.)

ENDNOTES

- 1 See Dabla-Norris et al.
- 2 For example, an individual whose income is in the 90th percentile will have an income many times greater than that of someone in the bottom 10th percentile. This huge difference in income between the top and bottom raises the Gini coefficient. When looking at regional income data, the relative difference between wealthiest regions and the poorest will not be nearly as large. Therefore, the Gini coefficient will be smaller in this case.
- 3 As of March 29, 2018.
- 4 This is based on authors' calculations using consumption expenditure data from the National Bureau of Statistics of China.
- 5 This is based on authors' calculations using consumption expenditure data from the Bureau of Labor Statistics. See BLS.

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Unequal Pink Slips? Gender and the Risk of Unemployment

By Guillaume Vandenbroucke and Heting Zhu



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KEY TAKEAWAYS

- The U.S. jobless rate for women had been higher than that for men for more than three decades after World War II.
- Starting in the 1980s, the gender unemployment gap shrank.
- Women now appear to be less exposed to increased unemployment during recessions than men.

Men and women fare differently in the labor market. There is, for instance, a large literature documenting earning differences between men and women who work the same job and have comparable education and experience. Similarly, it is well-known that progression and promotion in the workplace often seem more difficult for women than for men.

In this article, we discuss another facet of the difference between men and women in the labor force: their exposure to unemployment. We complement our analysis with a discussion of the black-white exposure to unemployment and show that it behaves noticeably differently than male-female exposure.

Figure 1 shows the difference between the unemployment rates of women and men since the late 1940s. We call this the “gender unemployment gap.” The shaded areas represent recessions dated by the National Bureau of Economic Research (NBER).

A few observations are worth noting. First, the gap tended to be positive before the 1980s; it was arguably large during the 1960s and 1970s, when the gap was between 1 and 2 percentage points. This means that for a long period of time, the unemployment rate of women was above that of men, i.e., women faced higher unemployment risk than men.

Second, throughout the 1980s and until the last recession, the gap was no longer as large as it had been. Instead, the gap seemed

to hover just above or below zero, suggesting that women and men faced a similar risk of unemployment during this period.

Finally, the unemployment gap exhibits a tendency to decrease during recessions. This is particularly clear in the last recession. The unemployment rates of men and women were very close in the months leading up to the recession. In June 2007, for instance, the unemployment rate was 4.7 percent for men and 4.4 percent for women. But the unemployment rate of men rose to 11 percent in January 2010 versus 8.4 percent for women, causing a gap of almost –3 percentage points between them at the end of the recession.

The decline of the gender gap in the unemployment rate indicates that women appear to be less exposed to increased unemployment during recessions than men.

Changes in the Gender Gap during Recessions

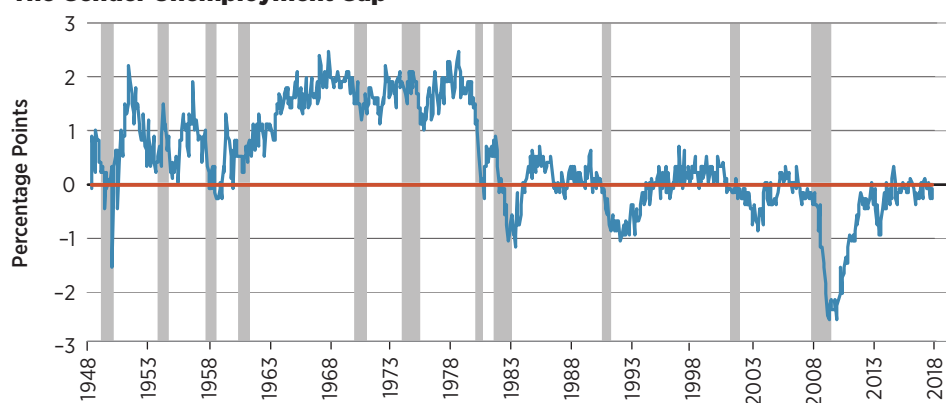
Changes in unemployment, which are large during recessions, can have important welfare consequences. But, how do recessions affect the unemployment gap? We address this question in Figure 2. To build this figure, we considered the last seven recessions identified by the NBER.¹

First, we collected the data on gender gap in unemployment that start with the beginning of each recession and end 24 months later. Then, to allow for an easy comparison between each of the seven series of numbers, we “normalized” the gap to zero at the beginning of each recession. This explains why the lines in Figure 2 all start at zero.

An example can help. Take the case of the 1980 recession. When the recession started in January 1980, the unemployment

Figure 1

The Gender Unemployment Gap



SOURCES: FRED (Federal Reserve Economic Data), National Bureau of Economic Research, Bureau of Labor Statistics and authors' calculation.

NOTES: The gap is the female unemployment rate minus the male unemployment rate; a positive gap means women were more exposed to joblessness than men. Data are for workers aged 16 and older. Shaded areas indicate a recession.

ABOUT THE AUTHORS

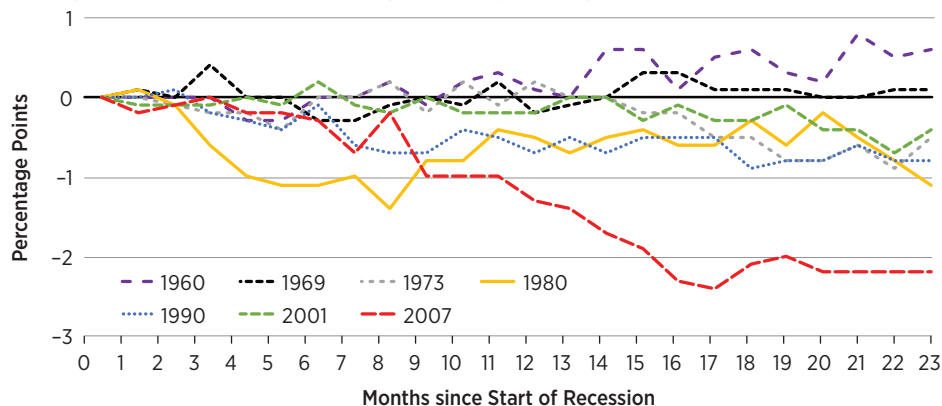
Guillaume Vandenbroucke is an economist and research officer at the Federal Reserve Bank of St. Louis. His research focuses on the relationship between economics and demographic change. He joined the St. Louis Fed in 2014. Read more about the author and his research at <https://research.stlouisfed.org/econ/vandenbroucke>.

Heting Zhu is a senior research associate at the Federal Reserve Bank of St. Louis.



Figure 2

Changes in the Gender Unemployment Gap during Recessions

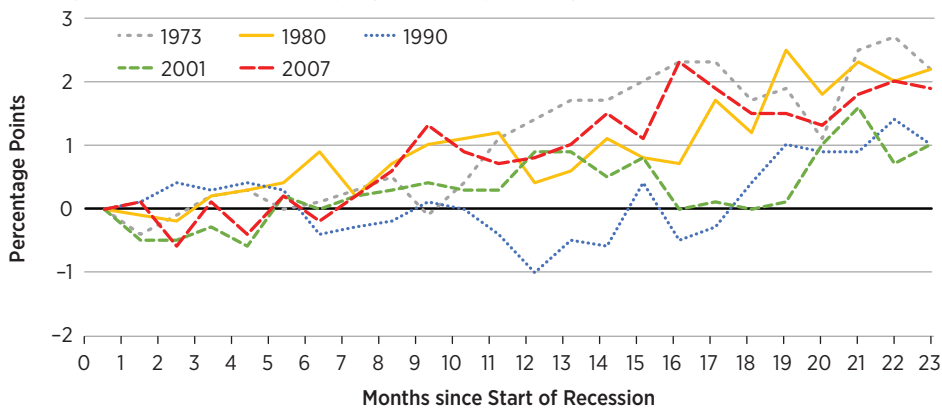


SOURCES: FRED (Federal Reserve Economic Data), National Bureau of Economic Research, Bureau of Labor Statistics and authors' calculation.

NOTES: A positive number indicates that the gap increased, i.e., the risk of unemployment rose more for women than men as the recession progressed. Conversely, a negative number indicates that the gap fell, i.e., the risk increased less for women than men.

Figure 3

Changes in the Racial Unemployment Gap during Recessions



SOURCES: FRED (Federal Reserve Economic Data), National Bureau of Economic Research, Bureau of Labor Statistics and authors' calculation.

NOTES: A positive number indicates that the gap increased, i.e., the risk of unemployment rose more for blacks than for whites as the recession progressed. Conversely, a negative number indicates that the gap fell, i.e., the risk increased less for blacks than whites.

gap between men and women was 1.1 percentage points, i.e., the women's unemployment rate was 1.1 percentage points higher than that of men. In May 1980, which was the fourth month after the start of the recession, the gap was 0.1 percentage point. Thus, the gap decreased by 1 percentage point. Hence, the -1 can be seen in Figure 2 at the fourth month after the start of the 1980 recession.

There are three groups of recessions that stand out in Figure 2. Consider first the 1960 and 1969 recessions. The

unemployment gap did not decrease significantly; it remained positive or near zero for one to two years after the start of the recession. This confirms the first observation made about Figure 1, that is, women faced higher unemployment risk than men.

The second group comprises the recessions from 1973 to 2001. These recessions show an approximately 0.5 to 1 percentage point decrease in the unemployment gap two years after the start of the recession.

Finally, the Great Recession—that is, the 2007 recession—stands out. Like recessions

from 1973 to 2001, the Great Recession was followed by a reduction in the unemployment risk of women relative to men. But the magnitude of the reduction is dramatically different: Two years after the start of the recession, the gender unemployment gap was about 2 percentage points lower. In summary, these post-1970 recessions imply a lasting reduction in the unemployment risk of women relative to men, but the last recession stands out in the magnitude of this reduction.

The Racial Gap

A similar analysis can be conducted across race instead of across gender. Figure 3 is analogous to Figure 2, but the gap analyzed there is the difference between black and white. A positive gap means that the black unemployment rate is higher than the white unemployment rate.²

The lesson from Figure 3 is remarkably different from that of Figure 2. First, the 2007 recession does not particularly stand out. Second, all the plotted recessions exhibit an increasing gap in the two years following the start of the recession. Black workers become relatively more exposed to unemployment than white workers after a recession.

Conclusion

We do not have a theory of the different patterns exhibited across recessions in Figure 2. Similarly, we do not have a theory of the difference between Figure 2 and Figure 3. We have documented the patterns of these gaps, but an explanation of these patterns is beyond the scope of our article. Yet the patterns raise important questions. Why are women relatively less exposed to the unemployment risk after recessions? Why are black workers relatively more exposed? Why does the Great Recession appear so different for the gender gap but not the race gap? Further research aimed at explaining these patterns would be of great interest. **RE**

(This article was published online May 7.)

ENDNOTES

¹ We do not consider the recession that started in July 1981 since it is subsumed in the two-year period after the start of the recession that began in January 1980.

² Data for the black unemployment rate are not available for the 1960s.

Accounting for Age: The Financial Health of Millennials

By YiLi Chien and Paul Morris



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KEY TAKEAWAYS

- Millennials and Generation X were the youngest working generations in 2016 and 2001, respectively. How do their balance sheets compare?
- Because of fewer assets and more debt, millennial households had an average net worth of about \$90,000 in 2016 versus \$130,000 for Generation X households in 2001.
- Spending more time in school and delaying marriage and other major life events may explain why millennials have a lower net worth.

There is no shortage of news articles written on the saving and investment behaviors of millennials. What is lacking, however, is a clear picture of what these young people are doing with their money.

The Wall Street Journal has reported concerns about low levels of saving related to mounting student loan and credit card debt. By contrast, the personal finance website NerdWallet pointed out that some millennials are saving considerable amounts for retirement.

There are also conflicting reports on their homebuying behavior. Real estate news website The Real Deal noted that millennials are not buying homes because of high student loan balances, but Business Insider reported that they are waiting longer to purchase their first homes and tend to purchase homes that are more expensive when they do buy.

Given that these articles fail to come to any consensus, we aim to offer a glimpse into the state of millennials' household finances. To see how millennials fared relative to the previous young generation, Generation X, we compared millennial households' finances in 2016 to those of Gen X back in 2001.¹ We analyzed the average asset and liability positions and

their compositions using household-level data from the Survey of Consumer Finances (SCF).²

Overall, our analysis indicates that reductions in both financial assets and nonfinancial assets (e.g., a home) contributed to millennials' having fewer overall assets than Gen Xers had in 2001. In terms of liabilities, the millennials were slightly more indebted on average, as they held a higher amount of student loans that outweighed reductions in mortgage and credit card debt.³

A Lower Net Worth

The average value of total assets was lower among millennials than Gen Xers. As shown in Figure 1, millennials held an average of \$162,000 of assets relative to Gen X's average of \$198,000.⁴

The reduction occurred in both financial and nonfinancial assets. The average financial asset position was around \$15,000 lower than in 2001, dropping from \$65,000 to \$50,000. The reduction of nonfinancial assets was \$22,000, dropping from \$133,000 to \$111,000.

Part of the reduction of the nonfinancial asset position occurred in housing. Millennials held an average of \$69,000 in their primary residence, while Gen Xers held an average of \$78,000. While millennials held lower levels of assets on average, they had a slight advantage in average retirement account balance, at \$15,500 relative to Gen X's \$13,600.

Millennials held a slightly higher level of total debt, at an average of \$72,000 compared to Gen X's average of \$67,000. While the average levels of debt were similar across the two generations, the composition was markedly different. Average student

loan levels surged from \$4,200 for Gen X to \$14,700 for millennials. Because of the smaller average value of housing assets for millennials, the level of mortgage debt was also smaller at \$43,000 compared to \$49,000 for Gen X.

We also observed that the burden of credit card debt among millennials was actually lower than that of the previous generation. The unpaid credit card balance stood at \$1,800, which was lower than Gen X's average \$2,700 (not shown in Figure 1).

In short, we see that millennials' average asset position was lower, while they held slightly more debt, which led to an average net worth of \$90,000 for millennials and \$130,000 for Gen X.

A Robustness Check

The prices of some asset categories may have changed significantly from 2001 to 2016. While the dollar values in the SCF are inflation-adjusted to 2016 dollars, this does not account for swings in the relative prices between asset categories that could make one category disproportionately more expensive in one year than another.

To alleviate this concern, we performed a simple robustness check. For each asset category, we computed the ratio of the average value for each generation to the average of all households in those respective years. We report the results in Figure 2. These ratios are best interpreted as a percentage of the average value for all households. For example, a ratio of 0.2 indicates that the generation in question held assets or liabilities equal to 20 percent of the average value across all households in that year.

The orange bar in the total assets category of Figure 2 represents the ratio of the average

ABOUT THE AUTHORS

YiLi Chien is an economist and research officer at the Federal Reserve Bank of St. Louis. His areas of research include macroeconomics, household finance and asset pricing. He joined the St. Louis Fed in 2012. Read more about the author and his research at <https://research.stlouisfed.org/econ/chien>.

Paul Morris is a senior research associate at the Federal Reserve Bank of St. Louis.

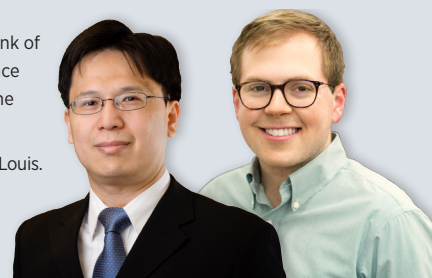
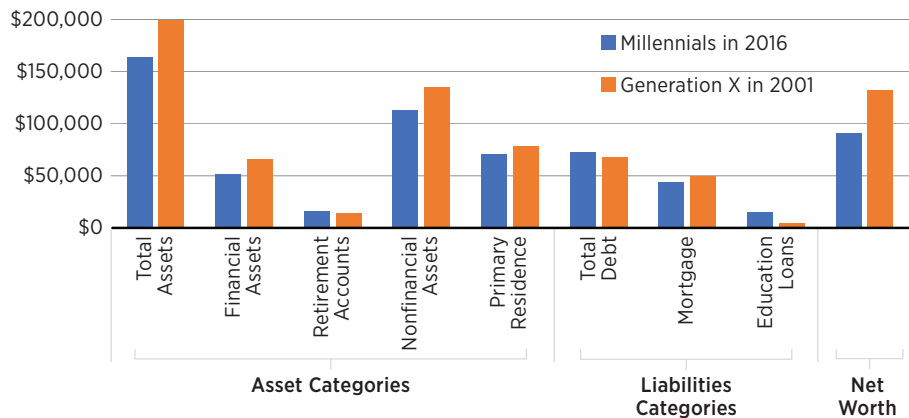


Figure 1

The Changing Balance Sheet across Generations

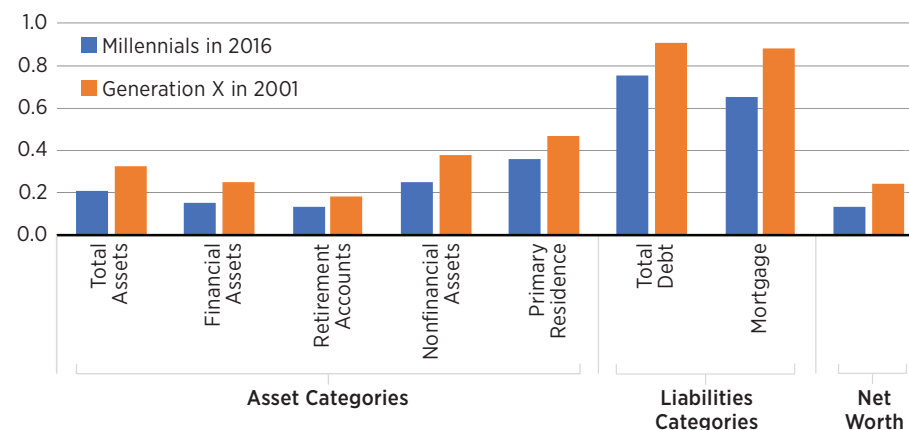


SOURCES: Survey of Consumer Finances and authors' calculations.

NOTES: Data are for the average household with a head between ages 20 and 35 in 2016 (millennials) and 2001 (Gen Xers). The chart displays total assets and types of assets, total debts and types of debts, and net worth, which is total assets less total debts. Financial assets include retirement accounts, and nonfinancial assets include primary residence.

Figure 2

Ratio of Balance Sheet Value of Young Generations to Average Value of All Ages



SOURCES: Survey of Consumer Finances and authors' calculations.

NOTES: The chart represents the ratio of balance sheet values for the average household with a head between ages 20 and 35 in 2016 (millennials) and 2001 (Gen Xers) relative to the average value for all households that year. The data are for total assets and types of assets, total debts and mortgage debts, and net worth, which is total assets less total debts. Financial assets include retirement accounts, and nonfinancial assets include primary residence. Education loans are excluded because the average value for all households is much smaller than the average value for households headed by young adults, leading to ratios well over 1.

total assets of Gen X to those of all households in 2001, while the blue bar represents a similar ratio for millennials in 2016.

In this relative measure, the millennials had a significantly smaller asset ratio (21 percent) than Gen Xers (32 percent). The financial assets, nonfinancial assets and housing ratios for millennials each dropped about 10 percentage points, and the retirement account ratio fell by about

5 percentage points.

By contrast, the average debt ratio was lower for millennials. Compared to those of Generation X, the total debt and mortgage ratios were down around 15 and 23 percentage points, respectively. Yet, these lower debt ratios were outweighed by lower asset ratios, thus pushing millennials' net worth ratio down to 13 percent from 24 percent for Generation X.⁵

Changing Priorities

The net worth of the youngest working generation fell since 2001, as they held fewer assets and more debt on average.

However, this is not necessarily an indictment of millennials' spending and saving habits. Society is in a state of transition as the life cycle continues to extend. People have been living longer and retiring later, and with that has come a multitude of other demographic shifts.

Relative to previous generations, more millennials have opted to delay entering the labor market, with many deciding to pursue higher levels of education. The labor force participation rate for 20- to 24-year-olds dropped to 70.5 percent in 2016 from 77.1 percent in 2001. Over the same period, the share of those ages 25 to 29 with four years of college or more increased from 28.4 percent to 36.1 percent. In addition, a higher percentage of young adults are living with their parents, and the median age at first marriage has been increasing for both men and women.⁶

We observe that millennials have been going to school longer and delaying major life events. Thus, it makes sense that they hold lower levels of assets. They have had less time in the labor force, and a smaller share of them have moved out on their own, which contributes to the lower levels of residential assets. However, they have shown a higher propensity to save for retirement and to avoid credit card debt.

While millennials hold higher levels of student loans, education is often an investment that improves productivity and future earnings. Given these considerations, the concerns regarding millennials' spending and saving habits may be at least partially eased, as they will likely have more time in the labor force to accrue assets and pay off their debts. **RE**

(This article was published online May 16.)

ENDNOTES

¹ We define millennial households as those whose heads are between ages 20 and 35 as of 2016, and we define Generation X households as those whose heads were in the same age range back in 2001. While there is no clear demarcation of generational boundaries, our definitions roughly match those popularly referenced.

² The survey provides cross-sectional data on U.S. households' demographic characteristics, incomes, balance sheets and pensions every three years.

(continued on Page 21)

St. Louis Fed Steps in to Provide More-Timely Jobs Data

By Charles Gascon and Paul Morris



KEY TAKEAWAYS

- Bureau of Labor Statistics revises state and local employment data just once a year.
- The St. Louis Fed analyzes the data and reports on it four times a year.
- This extra reporting can take the surprise out of a once-a-year revision.

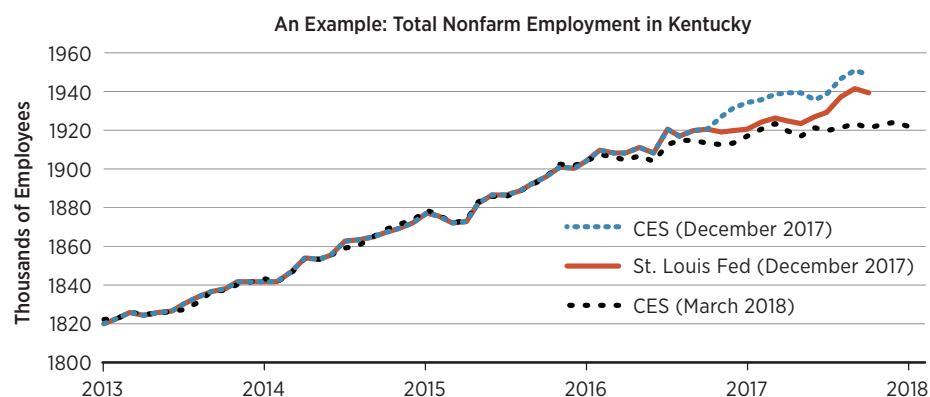
On March 12, the U.S. Bureau of Labor Statistics (BLS) released its annual revision to its monthly state and local employment data. The latest revision shows weaker growth across the Federal Reserve's Eighth District (based in St. Louis) than initially reported.¹ For example, growth from the fourth quarter of 2016 to the third quarter of 2017 in Arkansas was revised down from 2 percent to 0.8 percent; for another example, Kentucky's growth was revised down from 1.6 percent to 0.5 percent.

Although these revisions were significant, they didn't come as a surprise to us at the St. Louis Fed. We have been releasing our own estimates of regional employment growth since mid-2017, and they have generally matched up well with the revisions released every March by the BLS. Our estimates can alert policymakers of likely revisions well ahead of time, allowing them to make decisions based on information that is often more accurate than the initial releases from the BLS.

The BLS uses its Current Employment Statistics (CES) program to produce monthly estimates of nonfarm payroll employment. Once a year, it revises these figures, relying largely on data from its Quarterly Census of Employment and Wages (QCEW) program. Rather than wait for the annual revision, we have been producing our own quarterly job figures based on the most recent QCEW data. Back in December, we released our estimates that showed weaker

Figure 1

We Weren't As Surprised When the Data Were Revised



SOURCES: Bureau of Labor Statistics (BLS) and authors' calculations.

NOTE: Using Kentucky as an example, the figure shows the initially released data (blue dashed line) as of December 2017, alongside the St. Louis Fed's estimate at the same point in time (red line). The black dotted line shows the "true" revised values released by the BLS in March 2018. The initial release and the revised data are from the BLS' Current Employment Statistics (CES) program; our estimates use data from the BLS' Quarterly Census of Employment and Wages program.

employment growth across the Eighth District than was being reported by the BLS at the time.²

Predictable Data Revisions

Figure 1 plots time series of the initially reported BLS data as of early December for Kentucky, along with our estimates and the revised data released in March by the BLS. Our estimates provide us with more up-to-date information on the expected direction and magnitude of the revision in a particular area. In December, we expected the BLS to revise the initial CES release down from year-over-year growth of 1.6 percent to 1.1 percent. In March, the BLS revised growth down to 0.5 percent. While we were not expecting such a large

revision, our estimates correctly indicated a downward revision and were closer to the revised CES data than was the BLS release available in December.

Figures 2 and 3 report year-over-year growth for the states and four largest metropolitan statistical areas (MSAs) in the Eighth District. We excluded Illinois because the majority of economic activity in the state occurs in the Chicago area, which is part of the Federal Reserve's Seventh District. The BLS revised employment growth down in every state and in each of the four largest MSAs with the exception of Little Rock, Ark. In addition to capturing the single upward revision, our December estimates correctly predicted downward revisions across most

ABOUT THE AUTHORS

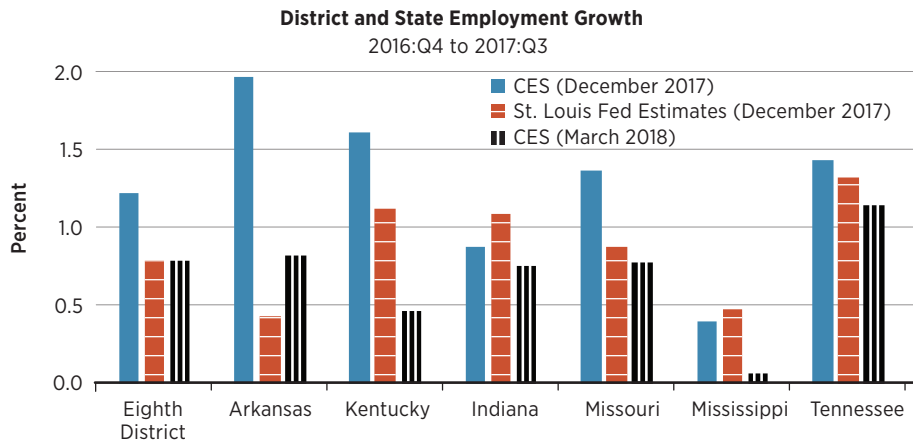
Charles Gascon (left) is a regional economist and a senior coordinator in the Research Division of the Federal Reserve Bank of St. Louis. His focus is studying economic conditions in the Eighth District. He joined the St. Louis Fed in 2006. Read more about the author and his research at <https://research.stlouisfed.org/econ/gascon>.

Paul Morris is a senior research associate at the St. Louis Fed.



Figure 2

Breaking Down the Data across the Eighth District

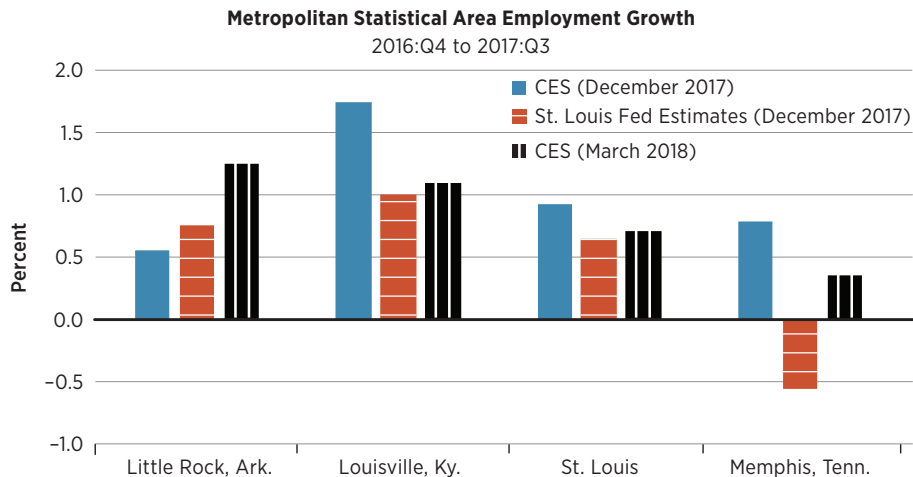


SOURCES: Bureau of Labor Statistics and authors' calculations.

NOTE: We excluded Illinois because the majority of economic activity in the state occurs in the Chicago area, which is part of the Federal Reserve's Seventh District. The Eighth District is based in St. Louis.

Figure 3

Does the Pattern Hold Up for the District's Biggest Cities?



SOURCES: Bureau of Labor Statistics and authors' calculations.

NOTE: The four cities are the largest MSAs in the Fed's Eighth District, which is based in St. Louis.

of the Eighth District. The exceptions were Indiana, where the BLS' revision was negligible, and Mississippi.

One way to think of the initial release of employment data is as an estimate of the "true" value that will be released in March, similar to our estimate produced at the same time. You can see that our estimates are much closer to the values released in March, on average.³ The average error of the initially reported CES data was 0.6 percent; our error was half that, or 0.3 percent. Our estimates improved upon the initial release in four of the six states

and three of the four MSAs.

In addition to improving upon the initially reported data in Kentucky, our estimates performed well in Arkansas. While our estimates overshot the downward revision, we brought the prediction error down to 0.4 percent from an initially reported 1.1 percent.

Memphis was a unique case. Our estimates suggested a steep downward revision. The direction of the revision was correctly predicted but was of a much smaller magnitude than anticipated, resulting in a larger prediction error.

Our estimates can alert policymakers of likely revisions well ahead of time, allowing them to make decisions based on information that is often more accurate than the initial releases from the BLS.

Are data revisions worthy of your attention?

That still left a gain of 17,300 jobs for the year, more than double the 7,000 jobs that metro St. Louis added in 2013. ... The 2014 figure was the region's best showing this century.

By David Nicklaus **ST. LOUIS POST-DISPATCH JAN. 27, 2015**

Statistics always look like the ultimate in hard evidence, right up until they turn squishy... Last year was no exception. ... Early estimates showed the St. Louis area creating 17,300 jobs, the best number in 15 years. Nope. Now the official gain for last year is 10,700 jobs, not much more than the previous year's 9,900.

By David Nicklaus **ST. LOUIS POST-DISPATCH APRIL 4, 2015**

Decisions Based on Early Data: Be Careful

Analyzing initially reported employment data can lead to incorrect conclusions when significant revisions occur, as we saw in Arkansas and Kentucky. Thus, an awareness of the expected revisions is important.

Revisions can occur for a variety of reasons, including: sample size may be small, new firms may not complete the BLS surveys when the firms are initially formed (leading to understating employment) and closing firms may not respond (leading to overstating employment).

While our December estimates do not perfectly match up with the BLS' revisions, ours serve as useful indicators of where we might expect employment growth to be when March arrives. Continue to check back, as we intend on releasing our employment estimates regularly in the future.

Calculating Our Estimates

We use a process developed at the Dallas Fed known as early benchmarking.⁴ It uses the same administrative data that the BLS uses for its annual benchmark revision.

Around the 20th of each month, the BLS releases estimates of state and local employment for the previous month produced from its CES survey. This is a voluntary survey of businesses and samples about 7 percent of establishments. The BLS relies heavily on its QCEW data for its revision, which is less timely but is collected from all establishments with employees covered by unemployment insurance. Because the BLS releases QCEW data with a six-month lag but only benchmarks in March, we have been able to produce early

estimates of revised state and local employment after each release of the QCEW.

Keep Up with ALFRED

The BLS' revised employment data for states, MSAs and industries across the nation far exceed the scope of the estimates that we produce. Fortunately, you can examine how the revisions changed the story of employment growth in a particular region using archived data. The St. Louis Fed maintains records of data revisions in its ALFRED (Archival Federal Reserve Economic Data) database, which allows you to retrieve vintage versions of data that were available on specific dates in history. This means that you can compare initial releases with revised data for any of the nonfarm payroll series available in FRED (Federal Reserve Economic Data, which is our signature database).


Step by Step Instructions, Using Missouri as an Example

To produce a line graph showing year-over-year growth rates of the data before and after the revision for a particular state or MSA, follow the procedure we outline below for the state of Missouri.

1. Start at the GeoFRED map of total nonfarm employment for states (<http://geof.red/m/9m7>). A corresponding map for MSAs is also available (<http://geof.red/m/9m6>).
2. Access the FRED page containing nonfarm payroll data for Missouri by clicking on the state. Then select the Details and Data tab and follow the link directly under the tab you just clicked.
3. Click on ALFRED Vintage Series in the

Related Content section underneath the chart to access the series in the ALFRED database.

4. Click on the Edit Graph button. Under the Format tab, change the graph type from bar to line.
5. Click on Edit Lines, select either Line 1 or Line 2, and change the units to Percent Change from Year Ago and copy to all.
6. Remain under the Edit Lines tab. Select vintage date "2018-03-12" for Line 1 and "2018-01-23" for Line 2, respectively.
7. Select a starting date for the graph dating back to at least the beginning of 2016. This ensures that the entirety of the BLS' revision period is visible.

The final line graph is available at <https://alfred.stlouisfed.org/graph/?g=jXjb>. 

(This article was published online May 31.)

ENDNOTES

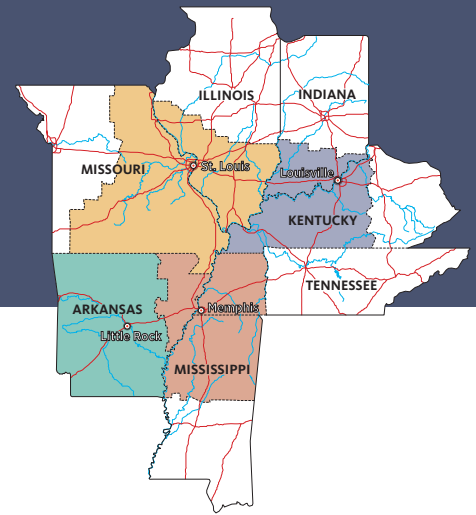
- ¹ The Eighth Federal Reserve District covers all or parts of Arkansas, Illinois, Indiana, Kentucky, Mississippi, Missouri and Tennessee.
- ² See Gascon and Morris.
- ³ We use prediction error as our performance metric, which we define to be the absolute value of the difference between the growth rates of the initial release or estimate and the revised data.
- ⁴ For more information on the early benchmarking process, see the Federal Reserve Bank of Dallas.

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- Federal Reserve Bank of Dallas. Early Benchmarking: How Early Benchmarking Improves the Accuracy of Payroll Employment Data. DataBasics. See <https://www.dallasfed.org/research/basics/benchmark.aspx>.

Gauging Debt Levels in the U.S. and Eighth District

By James D. Eubanks and Don E. Schlagenhauf



The Eighth Federal Reserve District is composed of four zones, each of which is centered around one of the four main cities: Little Rock, Louisville, Memphis and St. Louis.

KEY TAKEAWAYS

- In nominal terms, U.S. household debt continues to grow, exceeding a peak set in 2008. Is this cause for concern?
- In real terms, debt isn't at a new high. And the recent increase has been modest compared to the debt run-up before the Great Recession.
- Though the rate of serious delinquency is rising in both the U.S. and Eighth District, the increase doesn't appear to be troublesome.

In May, the Federal Reserve Bank of New York released its latest version of the Household Debt and Credit Report, which reported data for the first quarter of 2018. A key finding in this report is the continued increase in household debt. In fact, in the first quarter, nominal household debt reached \$12.8 trillion, exceeding the prior peak of \$12.7 trillion in 2008. Of course, shortly after the peak in 2008, a period of deleveraging occurred amid the Great Recession.

In this article, we look more closely at the recent developments in household debt accumulation nationally and in the Eighth District.¹ One of the key findings is that household debt is increasing, but it has not yet reached the level observed in 2008 if adjustments are made for inflation. Also, the cause of the debt run-up in 2008 was mortgage debt. By contrast, consumer credit card debt and auto debt are the key drivers in the more recent increase.

The Household Debt and Credit Report (HDCR) is based on an anonymized 5 percent sample of credit files assembled from data provided by the credit monitoring company Equifax. This data set is named the Equifax/Federal Reserve Bank of New York Consumer Credit Panel (CCP). We use this data to examine

credit developments in the United States as well as in the Eighth District.²

While we use the same data as in the HDCR, we make two adjustments. First, we use a different definition of total consumer debt. The New York Fed includes student debt; in this research, total consumer debt does not include student debt. The reason for the exclusion of individual student debt data is that this data was not consistently reported prior to 2006.

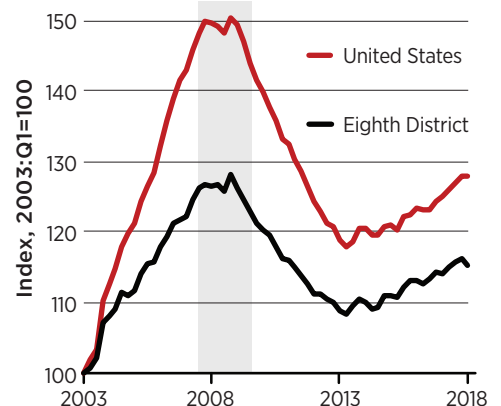
Second, we express all debt in inflation-adjusted values, whereas the HDCR reports nominal values of debt. We use the personal consumption expenditures (PCE) chain-type price index to adjust for inflation. In addition, we normalize each series so that the value is equal to 100 in the first quarter of 2003.

Figure 1 shows total inflation-adjusted consumer debt for the U.S. and the Eighth District; the Great Recession (December 2007 to June 2009) is highlighted by the gray bar.

Clearly, consumer debt was increasing rapidly before it peaked during the recession. It is also clear that the run-up in consumer debt in the Eighth District was much smaller than in the entire economy. The explanation lies with mortgage debt. The housing sector boom in the Eighth District was much smaller compared to

Figure 1

The Amount of Real Consumer Debt Has Yet to Peak



SOURCES: Equifax/Federal Reserve Bank of New York Consumer Credit Panel and authors' calculations.

NOTES: Consumer debt, which excludes student loans, has been adjusted by the personal consumption expenditures (PCE) price index. The shaded area represents the 2007-2009 recession.

ABOUT THE AUTHORS

Don E. Schlagenhauf (left) is an economist at the Federal Reserve Bank of St. Louis. His research focuses on macroeconomics and policy, with emphasis on housing. He joined the St. Louis Fed in 2017. Read more about the author and his research at <https://research.stlouisfed.org/econ/schlagenhauf>.

James D. Eubanks is a senior research associate at the Federal Reserve Bank of St. Louis.

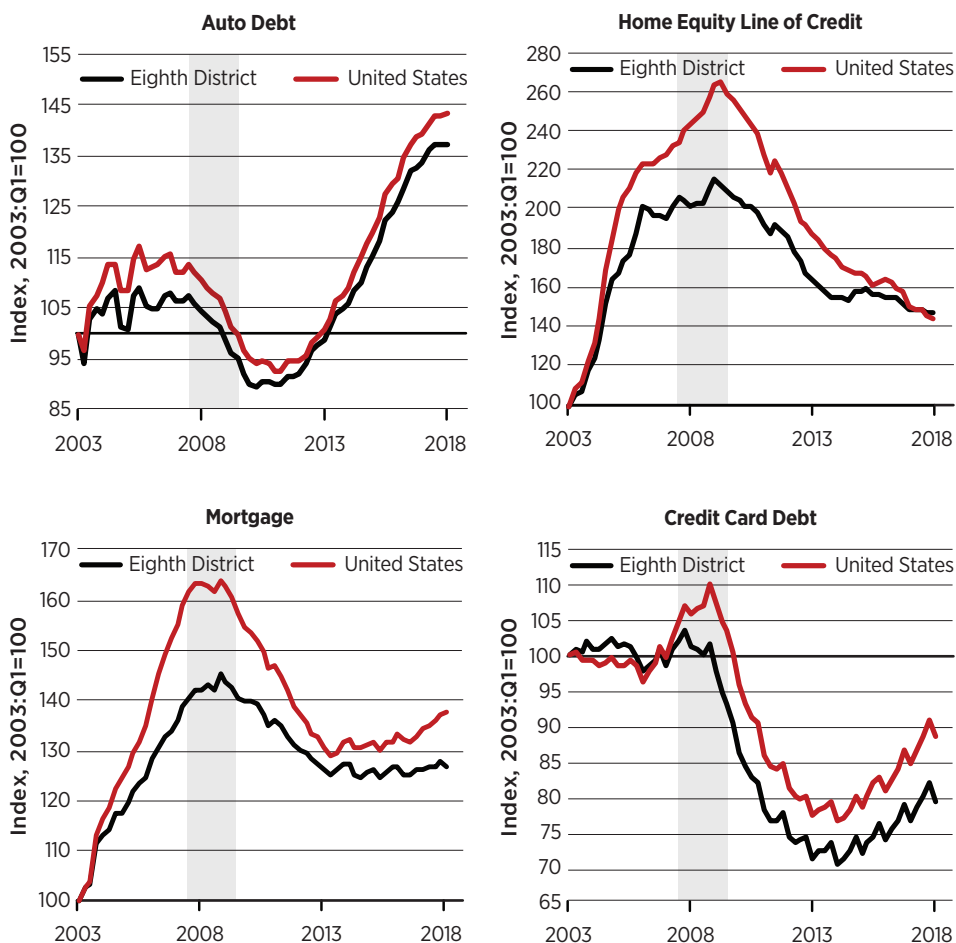




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Figure 2

Real Consumer Debt by Category



SOURCES: Equifax/Federal Reserve Bank of New York Consumer Credit Panel and authors' calculations.

NOTES: The debt value has been adjusted by the personal consumption expenditures (PCE) price index. The shaded area represents the 2007-2009 recession.

that of other regions. As a result, the increase in mortgage debt was smaller.

Since the latter part of 2013, total real consumer debt has increased once again, but this growth has been modest compared to the increase observed prior to the Great Recession.

Is a Debt Crisis on the Horizon?

The fact that real consumer debt is increasing in both the entire economy and the Eighth District leads to the question: Is another debt crisis on the horizon? In order to answer this question, we refer to Figure 2, where the major categories of consumer debt—auto debt, consumer credit card debt, home equity line of credit (HELOC) debt³ and mortgage debt—are reported.

As can be seen, the real value of mortgage debt has increased very slowly compared to the pre-Great Recession trend. In the Eighth District, the trends mirror the national trends. Specifically, HELOC debt has continued to decline. The real value of auto debt has increased since 2012, while consumer credit card debt has been generally increasing since 2014.

In the first quarter of 2018, the latest quarter for which data is available, consumer credit card debt increased nationally by 4.5 percent from the first quarter of 2017 and rose 3.1 percent in the Eighth District. In both cases, this increase is partially explained by the effect of the prior holiday season. Meanwhile, mortgage debt increased by 2.4 percent nationally; in the District, mortgage debt essentially did not change.

Auto debt increased both nationally and in the District, though growth has been easing since the second quarter of 2017. In contrast, HELOC debt declined nationally by 4.4 percent and by 1.4 percent in the District.

The Delinquency Problem

The increase in both credit card and auto debt has raised concerns in the popular press. No doubt these concerns are partially the result of memories of the role that mortgage debt played in causing the Great Recession.

Yet, debt is only a problem if it is defaulted upon. One approach to gauge the risk of future defaults is to examine the serious-delinquency rate, which is defined

as the share of debt that is past-due 90 days or more. In the Eighth District, delinquency rates did increase. However, the year-over-year increase was only 0.5 percentage points for auto debt and 0.4 percentage points for credit card debt. Changes in delinquency rates were of similar size nationally.

These increases are not troublesome. Yet, some may argue that these increases may signal future increases in delinquency rates, especially for auto debt. Their reasoning is that the auto industry, like the housing industry prior to the Great Recession, is relying on subprime lending

to further increase auto sales. Our data set, however, allows us to gain some insight into this argument as credit scores are available for the set of individuals in our sample.

We identify a subprime debt as an individual with a credit score in the 280-619 range. In the first quarter of 2018, the most recent data available, we found that the total real value of new auto loans to subprime borrowers dropped by 10.1 percent year-over-year in the Eighth District, while they increased by 2.4 percent in the U.S. If the declining pattern continues, the subprime concern over how auto sales

are being financed should be lessened in the Eighth District. **RE**

(This article was published online June 18.)

ENDNOTES

- ¹ Headquartered in St. Louis, the Eighth Federal Reserve District includes all of Arkansas and parts of Illinois, Indiana, Kentucky, Mississippi, Missouri and Tennessee.
- ² Later this year, we will write a companion piece that looks at developments in the major metropolitan statistical areas within the Eighth District.
- ³ HELOC debt is simply borrowing on the equity a homeowner has accrued on the home owned.

Financial Health of Millennials

(continued from Page 15)

- ³ In addition to average asset and liability positions, we also compared median asset and liability positions across generations. The results are qualitatively similar to the averages. However, the median levels of housing assets, retirement account balances and mortgage debt were zero, making comparisons infeasible. For example, more than half of millennials had no housing assets.
- ⁴ The dollar numbers reported in the SCF data are inflation-adjusted to 2016 dollars and therefore can be compared directly. In this article, dollar amounts of \$20,000 and greater have been rounded to the nearest \$1,000; those lower than \$20,000 have been rounded to the nearest \$100.
- ⁵ As always, we cannot rule out that other underlying factors could possibly bias the results shown in both Figures 1 and 2. However, we see similar patterns across both figures, implying a consistent story that millennials hold lower levels of assets and have lower net worth than Generation X on average.
- ⁶ The labor force participation rate data are from the Bureau of Labor Statistics, and the demographic data are from the Census Bureau.

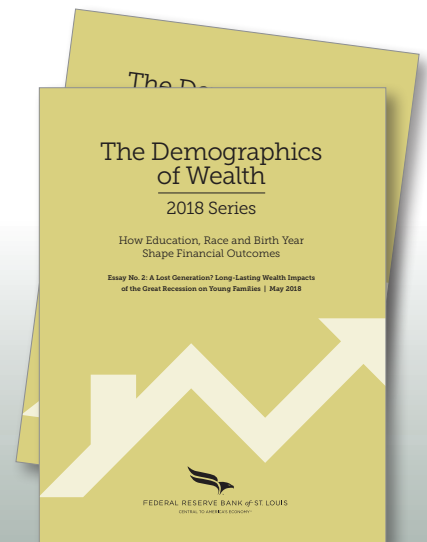
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Cryptocurrencies and Fintech

Can't make head or tail of Bitcoin? Wonder what blockchain is? Check out a new webpage offered by the Research Division of the St. Louis Fed. There you can read more about cryptocurrencies, blockchain and their possible impact.

<https://research.stlouisfed.org/publications/cryptocurrencies-and-fintech/>



DOOMED TO BE A "LOST GENERATION"?

You didn't choose your birth year, but it could affect your wealth. The Great Recession hit groups born in certain decades harder than others: Was yours among them? Find out by reading the latest *Demographics of Wealth* essay, www.stlouisfed.org/household-financial-stability/the-demographics-of-wealth.

U.S. Economic Growth Appears Solid This Year

By Kevin L. Kliesen



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KEY TAKEAWAYS

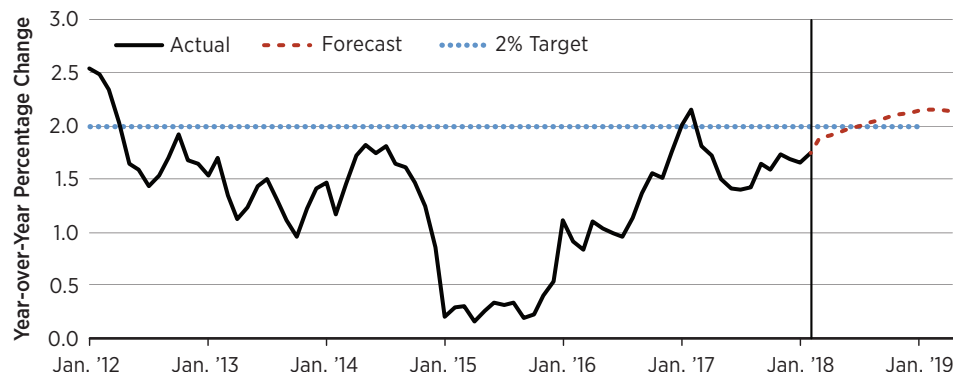
- Professional forecasters expect the U.S. economy to sustain above-trend growth, perhaps close to 3 percent, for the remainder of 2018.
- Business fixed investment continued to grow at a healthy pace in the first quarter, but growth in household spending slowed.
- Real gross domestic product is likely to grow 2.5 to 3.0 percent for 2018 and 2019, while the unemployment rate will probably decline further.

The U.S. economy continues to expand at a rate that exceeds its potential rate of growth (somewhere around 2.25 percent). The consensus of professional forecasters is that above-trend growth, perhaps close to 3 percent, will persist over the remainder of 2018, likely leading to further reductions in the unemployment rate. However, inflation has rebounded modestly and is now at the 2 percent target rate of the Federal Open Market Committee (FOMC). Overall, the near-term outlook for the national economy appears solid.

Healthy Growth but Larger Budget Deficits

After increasing at a 3 percent annual rate over the second half of 2017, real gross domestic product (GDP) advanced at a 2.3 percent annual rate in the first quarter. Of note, business fixed investment continued to expand at a healthy rate, increasing at a rate of more than 6 percent for the fourth time in the past five quarters. Surveys of large and small businesses continue to show considerable optimism as a result of this year's tax cuts and additional increase in federal government outlays. In response, most economists expected

Headline Personal Consumption Expenditures (PCE) Inflation: Actual and Forecast



SOURCES: Bureau of Economic Analysis, along with Laura Jackson, Kevin Kliesen and Michael Owyang, the authors of the article in the notes below.

NOTES: The above forecast was calculated on April 25, 2018, before the release of actual PCE inflation for March. The forecast is produced from the St. Louis Fed's FAVAR model. For more details on the model, see "A Measure of Price Pressures," Federal Reserve Bank of St. Louis Review, First Quarter 2015, Vol. 97, No. 1, pp. 25-52.

continued brisk growth of real personal consumption expenditures (PCE), which had advanced at a 3.1 percent annual rate over the second half of 2017. However, real PCE growth slowed sharply in the first quarter to the smallest increase in about five years (1.1 percent). This development has led some forecasters to wonder whether the expected boost to household expenditures from the tax cuts was too optimistic.

A key question in the outlook is whether the modest slowing in first-quarter consumption growth is temporary or whether it points to something more persistent. Overall, fundamentals suggest real PCE growth will probably rebound over the remainder of the year. Importantly, the demand for labor remains strong, helping to fuel solid gains in labor compensation. For

example, the National Association for Business Economics (NABE) Business Conditions Survey released in May indicated that the wages and salaries net rising index (percentage of firms reporting rising wages less percentage reporting falling wages) posted its highest level on record (back to 1982). Indeed, there were signs of a spring thaw in consumption spending, as real PCE increased at a robust 5.1 percent annual rate in March. With consumer spending likely to rebound, coupled with the still-healthy outlook in construction spending and some strengthening in U.S. exports, forecasters generally believe that real GDP growth will be modestly stronger over the final three quarters of the year.

Professional forecasters also expect some bump in government expenditures this year and the next from the Bipartisan

ABOUT THE AUTHOR

Kevin L. Kliesen is a business economist and research officer at the Federal Reserve Bank of St. Louis. His research interests include business economics, and monetary and fiscal policy analysis. He joined the St. Louis Fed in 1988. Read more about the author and his research at <https://research.stlouisfed.org/econ/kliesen>.



Budget Act that was signed into law in February. However, the trade-off from lower taxes and increased government spending is an expected erosion in the budget outlook. In April, the Congressional Budget Office (CBO) released its Budget and Economic Outlook. In nominal dollar terms, the CBO projects that the federal budget deficit will average \$1.2 trillion per year from fiscal years 2019 to 2028 (roughly 5 percent of nominal GDP). Larger budget deficits, stronger economic growth and the FOMC's plan to reduce the size of its balance sheet all suggest rising long-term interest rates over the near term.

Inflation Developments

All else equal, higher inflation will also increase interest rates. Inflation was stronger than expected in the first quarter. After increasing by 1.7 percent in December 2017 from a year earlier, the all-items PCE price index rose to 2 percent in March 2018 from a year earlier. Some of this firming reflects the recent run-up in crude oil prices, which have more than doubled since their recent low of just under \$31 per barrel in February 2016. In addition, firms appear to be experiencing sizable materials cost pressures, as noted in the aforementioned NABE survey. With little discernible erosion in profit margins thus far in 2018, this finding suggests that many firms have begun passing along a portion of these increased costs to consumers.

Although the St. Louis Fed's inflation forecasting model projects a modest further increase in inflation over the near term, to about 2.25 percent in early 2019, the model continues to indicate a small probability (less than 10 percent) that headline inflation will accelerate past 2.5 percent over the next 12 months.

At this point, the most likely outcome for 2018 and 2019 is real GDP growth of between 2.5 percent and 3 percent, inflation close to the Fed's 2 percent target—with perhaps some modest risk of an overshoot if crude oil prices continue to trend higher—and further declines in the unemployment rate. **RE**

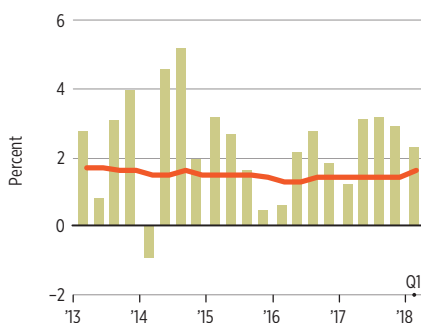
Brian Levine, a research associate at the Bank, provided research assistance.

(This article was published online May 24.)

ECONOMY AT A GLANCE

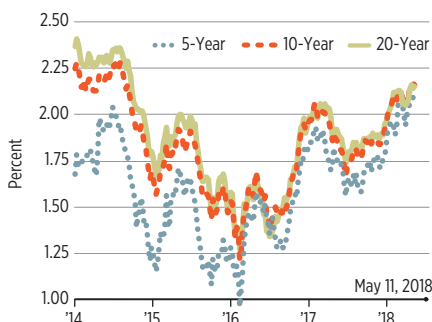
All data as of May 11, 2018

Real GDP Growth



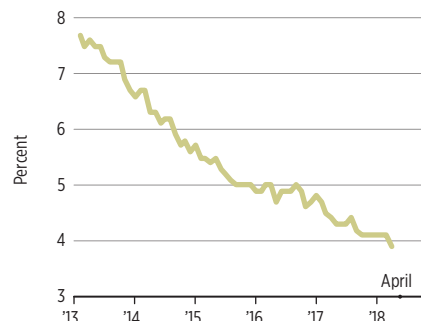
NOTE: Each bar is a one-quarter growth rate (annualized); the red line is the 10-year growth rate.

Inflation-Indexed Treasury Yield Spreads

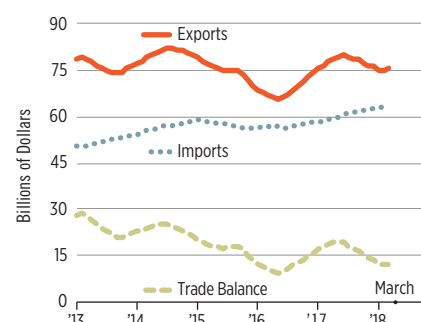


NOTE: Weekly data.

Civilian Unemployment Rate

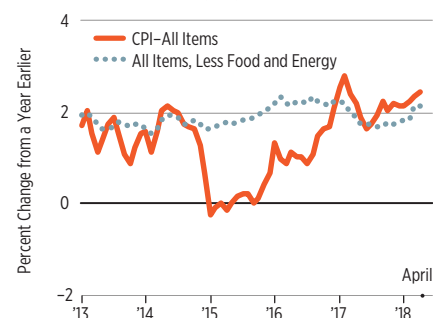


U.S. Agricultural Trade

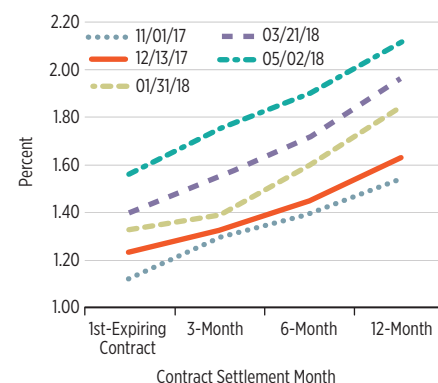


NOTE: Data are aggregated over the past 12 months.

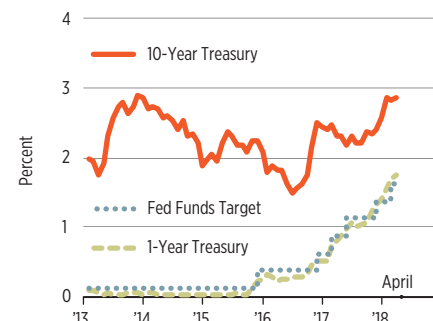
Consumer Price Index (CPI)



Rates on Federal Funds Futures on Selected Dates

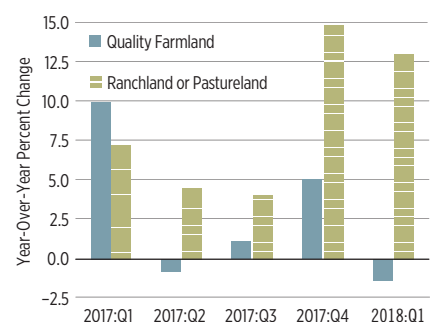


Interest Rates



NOTE: On Dec. 16, 2015, the FOMC set a target range for the federal funds rate of 0.25 to 0.5 percent. The observations plotted since then are the midpoint of the range.

Average Land Values Across the Eighth District



SOURCE: Agricultural Finance Monitor.

On the web version of this issue, 11 more charts are available, with much of those charts' data specific to the Eighth District. Among the areas they cover are agriculture, commercial banking, housing permits, income and jobs. To see those charts, go to www.stlouisfed.org/economyataglance.



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Understanding the Trade Deficit

Seeking to bolster the country's economic fortunes, U.S. policy-makers have recently focused on reducing the trade deficit with China. But is the trade imbalance the cause of job loss in America or a symptom of deeper economic changes? We take a closer look at the U.S. trade deficit with China.

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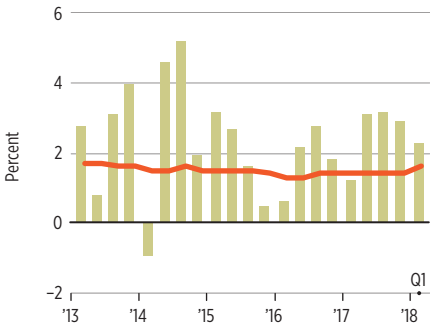
ECONOMY AT A GLANCE

All data as of May 11, 2018.

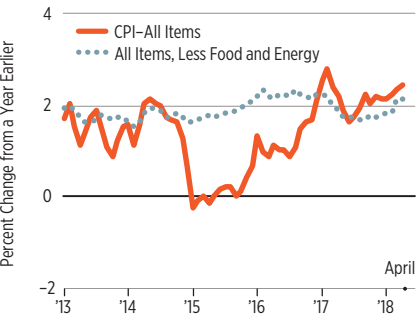
RE REGIONAL ECONOMIST

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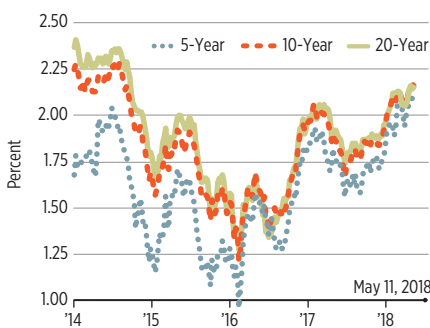
Real GDP Growth



Consumer Price Index (CPI)

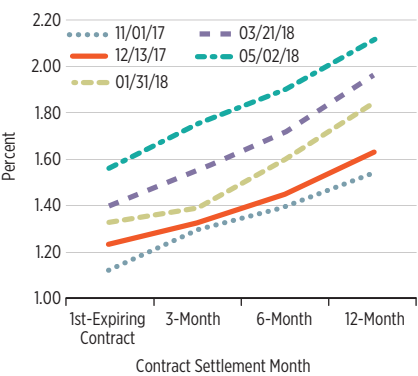


Inflation-Indexed Treasury Yield Spreads



NOTE: Weekly data.

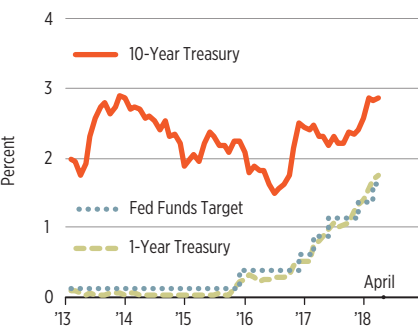
Rates on Federal Funds Futures on Selected Dates



Civilian Unemployment Rate

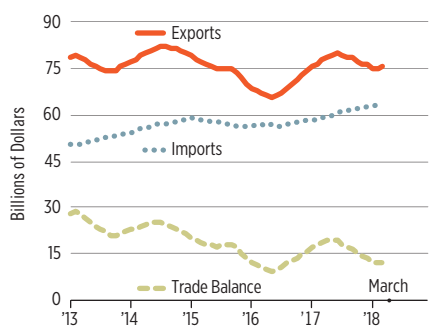


Interest Rates



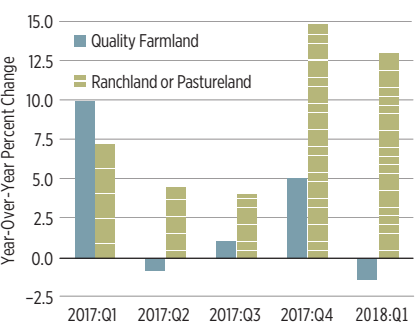
NOTE: On Dec. 16, 2015, the FOMC set a target range for the federal funds rate of 0.25 to 0.5 percent. The observations plotted since then are the midpoint of the range.

U.S. Agricultural Trade



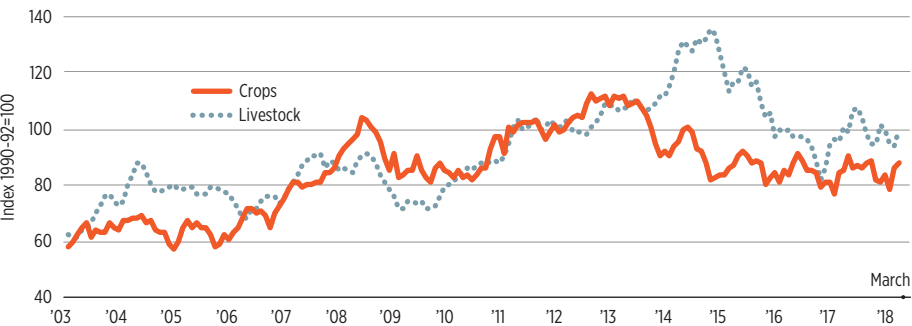
NOTE: Data are aggregated over the past 12 months.

Average Land Values across the Eighth District



SOURCE: Agricultural Finance Monitor.

U.S. Crop and Livestock Prices

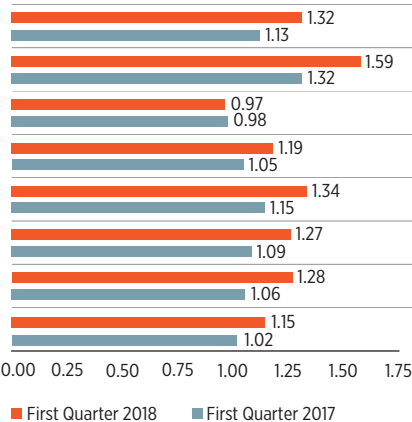


COMMERCIAL BANK PERFORMANCE RATIOS

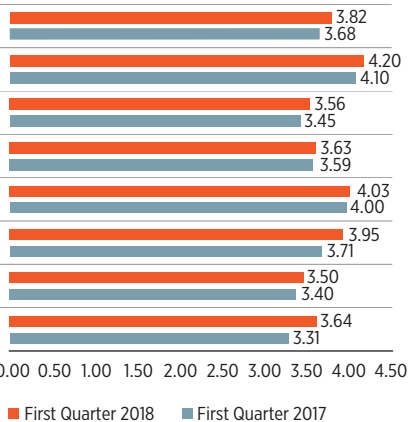
U.S. Banks by Asset Size/First Quarter 2018

	All	\$100 million-\$300 million	Less than \$300 million	\$300 million-\$1 billion	Less than \$1 billion	\$1 billion-\$15 billion	Less than \$15 billion	More than \$15 billion
Return on Average Assets*	1.26	1.16	1.12	1.20	1.17	1.29	1.24	1.27
Net Interest Margin*	3.23	3.89	3.88	3.86	3.87	3.86	3.87	3.10
Nonperforming Loan Ratio	1.11	1.00	0.84	0.91	0.88	0.83	0.86	1.18
Loan Loss Reserve Ratio	1.23	1.35	1.36	1.29	1.32	1.10	1.18	1.25

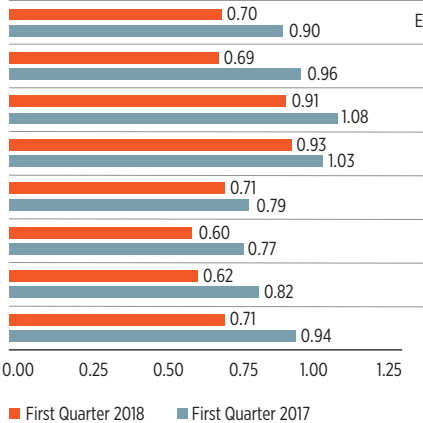
Return on Average Assets*



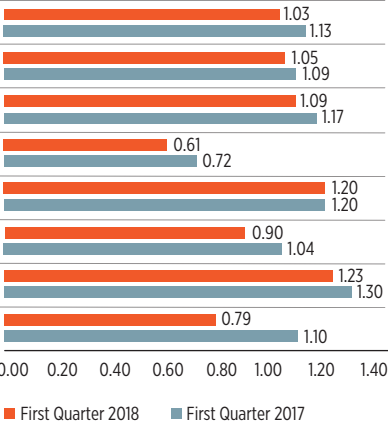
Net Interest Margin*



Nonperforming Loan Ratio



Loan Loss Reserve Ratio



SOURCE: Federal Financial Institutions Examination Council Reports of Condition and Income for all Insured U.S. Commercial Banks.

NOTE: Data include only that portion of the state within Eighth District boundaries.

*Annualized data.

For additional banking and regional data, visit our website at <https://fred.stlouisfed.org>.

REGIONAL ECONOMIC INDICATORS

Nonfarm Employment Growth/First Quarter 2018

Year-Over-Year Percent Change

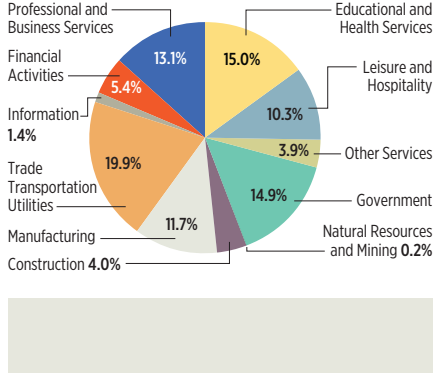
	United States	Eighth District †	Arkansas	Illinois	Indiana	Kentucky	Mississippi	Missouri	Tennessee
Total Nonagricultural	1.5%	0.9%	0.4%	0.8%	0.6%	0.4%	1.1%	1.2%	1.6%
Natural Resources/Mining	9.0	-2.2	-5.7	-4.4	1.2	0.3	-5.3	0.8	0.0
Construction	3.9	0.4	-0.5	1.3	2.8	-1.4	1.9	-2.7	NA
Manufacturing	1.8	1.4	1.4	3.2	0.9	0.3	0.4	1.8	0.3
Trade/Transportation/Utilities	0.9	0.6	-0.3	-0.1	0.6	2.2	0.6	0.6	1.0
Information	-1.9	-3.2	-8.2	-4.5	-9.4	-3.0	-5.4	2.0	0.3
Financial Activities	1.6	1.8	1.6	2.4	0.4	-0.6	3.0	2.1	2.5
Professional & Business Services	2.4	1.3	0.7	-0.2	1.6	-0.1	4.1	4.3	1.6
Educational & Health Services	2.0	1.3	1.0	0.6	2.2	0.3	3.0	1.7	1.9
Leisure & Hospitality	2.0	1.2	0.6	1.6	-0.8	-0.9	1.3	0.0	4.6
Other Services	1.6	0.4	0.5	-0.2	-0.9	2.5	0.8	-0.3	2.1
Government	0.0	0.3	0.3	1.0	-0.4	-0.3	-0.5	0.0	0.7

† Eighth District growth rates are calculated from the sums of the seven states. Each state's data are for the entire state even though parts of six of the states are not within the District's borders.

Unemployment Rates

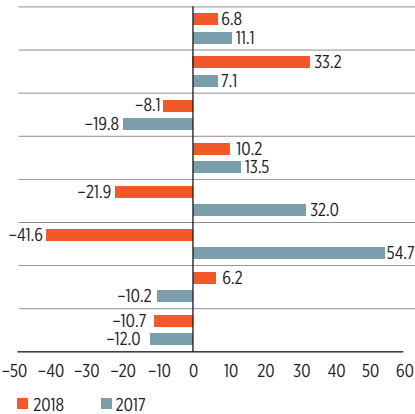
	I/2018	IV/2017	I/2017
United States	4.1%	4.1%	4.7%
Arkansas	3.8	3.7	3.6
Illinois	4.7	4.9	5.1
Indiana	3.2	3.4	3.7
Kentucky	4.1	4.5	5.2
Mississippi	4.5	4.8	5.4
Missouri	3.7	3.6	4.0
Tennessee	3.4	3.3	4.4

Eighth District Payroll Employment by Industry-2017



Housing Permits/First Quarter

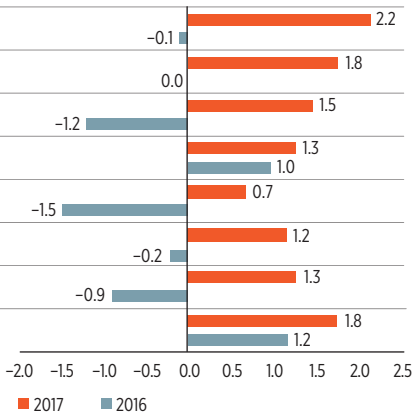
Year-Over-Year Percent Change in Year-to-Date Levels



NOTE: All data are seasonally adjusted unless otherwise noted.

Real Personal Income/Fourth Quarter

Year-Over-Year Percent Change



NOTE: Real personal income is personal income divided by the personal consumption expenditures chained price index.