

Economic Trends

July 2014 (June 13, 2014-July 16, 2014)

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FEDERAL RESERVE BANK
of CLEVELAND

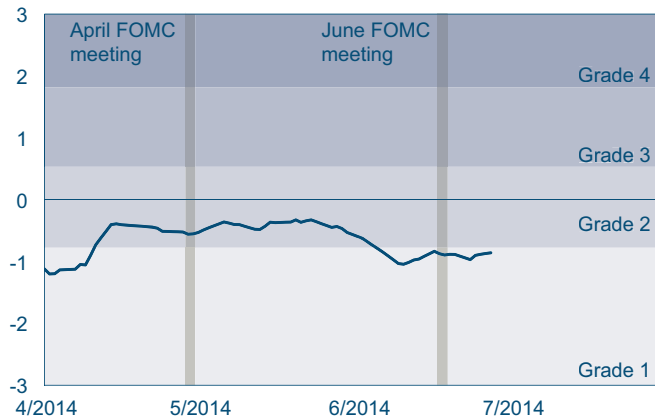
Tracking Recent Levels of Financial Stress

07.01.14

by Amanda Janosko

Cleveland Financial Stress Index

Standard deviation

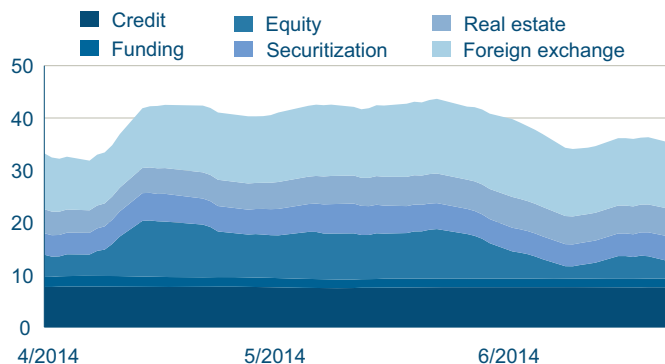


Note: Shaded bars indicate recessions.

Source: Oet, Bianco, Gramlich, and Ong, 2012. "A Lens for Supervising the Financial System," Federal Reserve Bank of Cleveland working paper no. 1237.

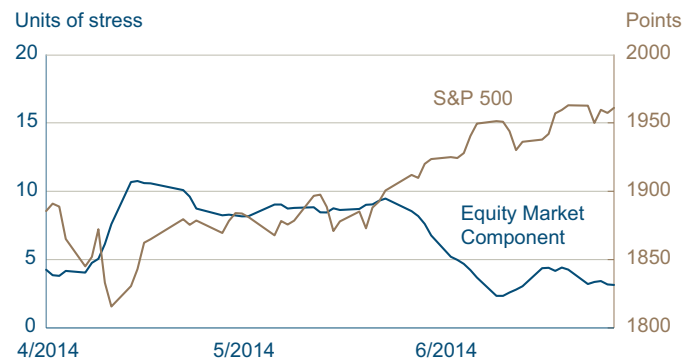
The Cleveland Financial Stress Index (CFSI) remained in Grade 2 or a "normal stress" period throughout the early part of second quarter 2014. More recently, the index has trended downward into Grade 1 or a "low stress" period. As of June 27, the index stands at -0.860 , which is 3.966 standard deviations below the historic high in December 2008 and 1.244 standard deviations above the historical low in January 2014. The index is down 0.837 standard deviations from this time last year.

Stress-Level Contributions of Component Markets to CFSI



Note: These contributions refer to levels of stress, where a value of 0 indicates the least possible stress and a value of 100 indicates the most possible stress. The sum of these contributions is the level of the CFSI, but this differs from the actual CFSI, which is computed as the standardized distance from the mean, or the z-score.
Source: Oet, Bianco, Gramlich, and Ong, 2012. "A Lens for Supervising the Financial System," Federal Reserve Bank of Cleveland working paper no. 1237.

Equity Market Contribution to Stress



Note: These contributions refer to levels of stress, where a value of 0 indicates the least possible stress and a value of 100 indicates the most possible stress. The sum of these contributions is the level of the CFSI, but this differs from the actual CFSI, which is computed as the standardized distance from the mean, or the z-score.
Sources: Author's calculations; Haver Analytics.

The increased contributions of the equity and securitization markets to overall financial stress were responsible for the index remaining in Grade 2 for much of the quarter. The index moved back into Grade 1 as the securitization and equity contributions waned and stock prices reached historic highs in June. The CFSI's credit, funding, real estate, and foreign exchange markets remained relatively stable over the quarter.

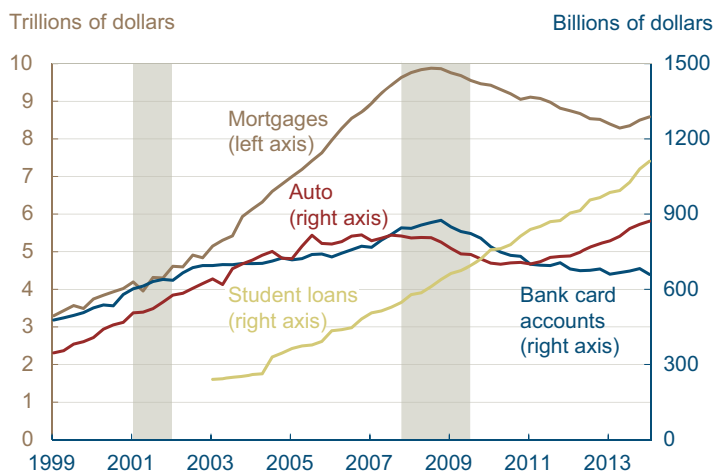
The Cleveland Financial Stress Index and all of its accompanying data are posted to the Federal Reserve Bank of Cleveland's website at 3 pm daily. For a brief overview of how the index is constructed see this page. The CFSI and its components are also available on FRED (Federal Reserve Economic Data), a service of the Federal Reserve Bank of St. Louis. FRED allows users to download, graph, and track more than 200,000 data series.

Households Ease Up on Adding New Debt

07.01.14

by O. Emre Ergungor and Daniel Kolliner

Total Balance of Accounts is Rising: Deleveraging is Over



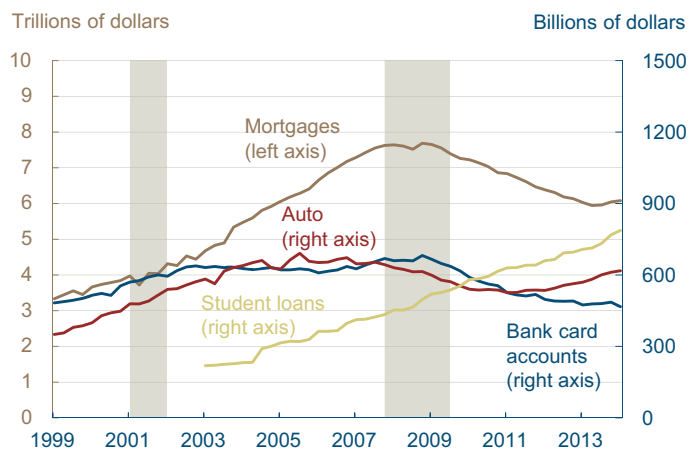
Note: Shaded bars indicate recessions.

Source: Federal Reserve Bank of New York's Consumer Credit Panel/Equifax.

A key question for the continued economic recovery is whether household deleveraging is over. If households are beginning to add debt to their balance sheets, it may be a sign that consumers' confidence has returned and consumption might be increasing.

In response to the financial crisis in 2007, households cut back sharply on their borrowing, particularly in mortgages and bank cards. Lenders were also part of the deleveraging process by tightening up on credit standards and charging off bad loans. After peaking in 2008:Q3 at \$12.7 trillion, household debt declined for 17 out of the next 19 quarters. In the last three quarters, it has increased and is currently at \$11.7 trillion. Given that debt levels and interest rates are so low, this additional debt is not particularly burdensome, and it could support consumption growth.

Total Balance of Accounts in 1999 Dollars: A Better Indicator of the Toll of Deleveraging

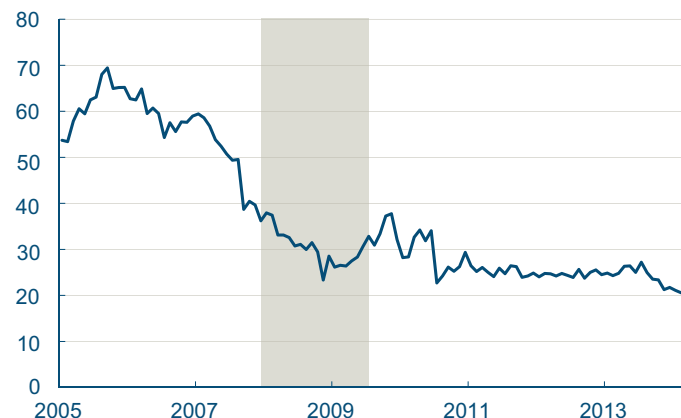


Note: Shaded bars indicate recessions.

Source: Federal Reserve Bank of New York's Consumer Credit Panel/Equifax.

Purchase Originations Are Slowing Down

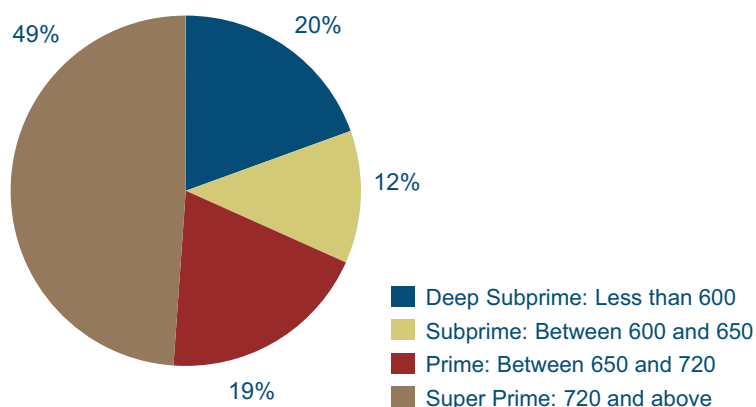
Billions of dollars (seasonally adjusted)



Note: Shaded bar indicates a recession.

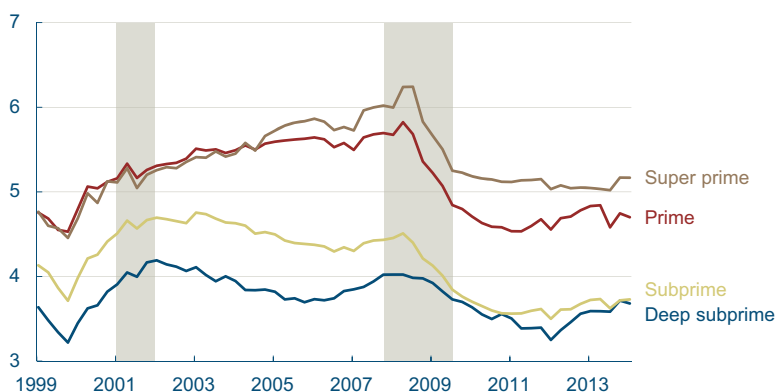
Sources: Black Knight Financial Services; authors' calculations.

Borrower Categories and Equifax Risk Scores



Source: Federal Reserve Bank of New York's Consumer Credit Panel/Equifax.

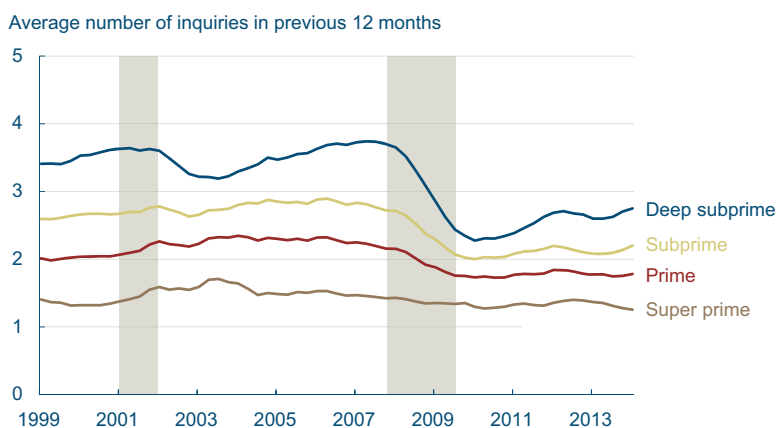
Average Number of Accounts



Note: Shaded bars indicate recessions.

Source: Federal Reserve Bank of New York's Consumer Credit Panel/Equifax.

Deep Subprime Eager to Borrow



Note: Shaded bars indicate recessions.

Source: Federal Reserve Bank of New York's Consumer Credit Panel/Equifax.

By most accounts, household deleveraging appears to be over. Auto and student loans have been strong throughout the recovery, and mortgage lending is beginning to turn the corner. However, after calculating the same data in inflation-adjusted terms (1999 dollars), the weakness in consumer credit looks more striking. For example, in nominal terms, mortgage balances are up to their 2007 level and increasing. In real terms, the balances are still flat at their 2005 level. Also, while the recent growth in auto loan balances looks strong in nominal terms, the balances are still below their pre-crisis peak in real terms.

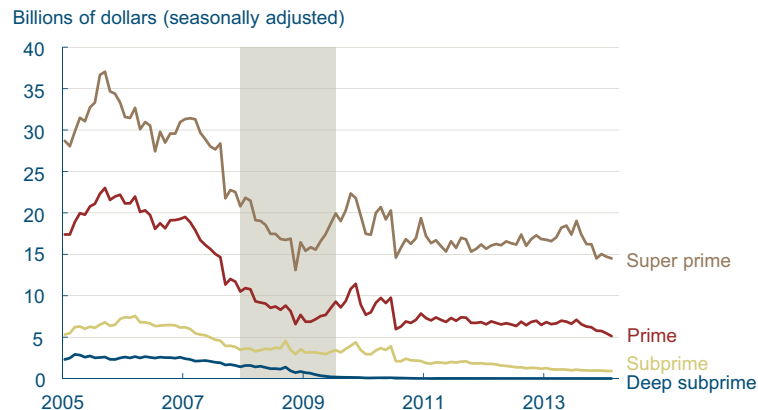
The recent growth in mortgage balances also seems to be abating. Mortgage debt will continue to increase as long as purchase originations are greater than amortizations; however, purchases declined sharply in early 2014. Compared to January and February 2013, purchase originations for mortgages declined 15.1 percent and 15.3 percent, respectively, and they have been declining year-over-year since August 2013.

Not all households are adding debt at the same pace. Those with strong credit scores seem to be benefiting most from the low borrowing costs. A “strong” score corresponds to an Equifax Risk Score above 720. Nearly half of the population is in that range, which we call the “super prime” category. At the other extreme of the risk scale are the “deep subprime” borrowers, whose Equifax Risk Scores are below 600.

In general, individuals with higher credit scores are also the most frequent users of credit. Currently, an average super prime borrower has five open credit accounts, but a deep subprime borrower has fewer than four, which is still a significant improvement relative to the post-crisis lows.

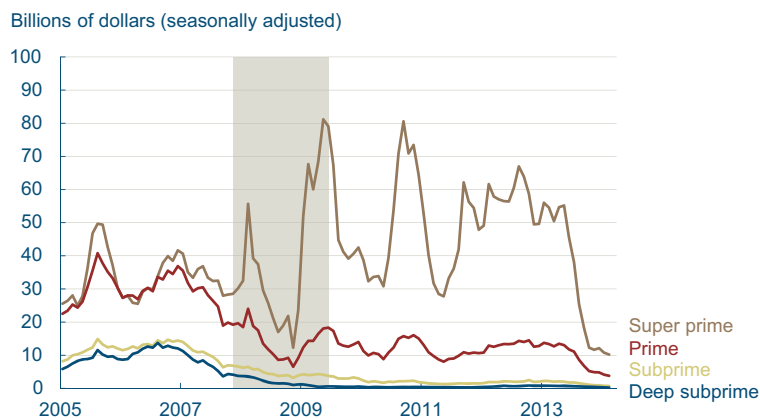
Yet the deep subprime borrowers apply for credit most frequently, an indicator of the frequent denials they face and their pent-up credit demand. During the crisis, they cut back on their credit applications significantly, which may be interpreted as a sign of their discouragement at the credit market conditions at the time. Since 2010, however, they are once again getting their toes wet in the credit markets, although they are still not as eager to seek

Purchase Origination Slowdown Affecting All Borrowers



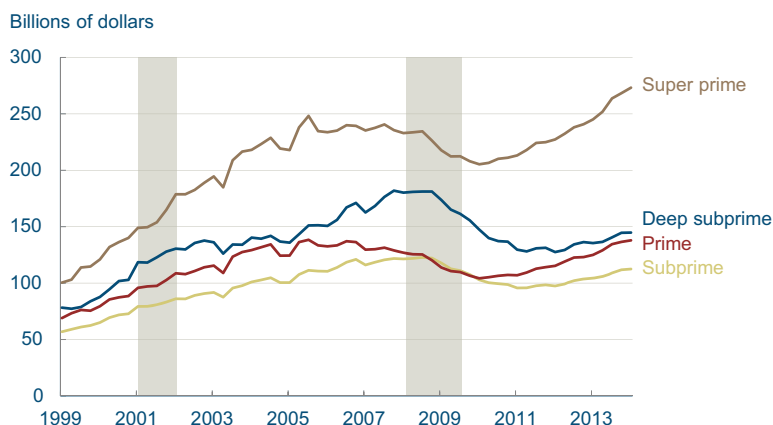
Note: Shaded bar indicates a recession.
Sources: Black Knight Financial Services; authors' calculations.

The Refinance Boom Benefited Prime Borrowers



Note: Shaded bar indicates a recession.
Sources: Black Knight Financial Services; authors' calculations.

Borrowers and the Auto Loan Boom



Note: Shaded bars indicate recessions.
Source: Federal Reserve Bank of New York's Consumer Credit Panel/Equifax.

loans as they used to be. Their credit application numbers are 36 percent less than the prerecession high.

In the mortgage market, prime and super prime borrowers were responsible for most of the purchase and refinance activity. Subprime and deep subprime creditors no longer contribute a significant part of mortgage originations.

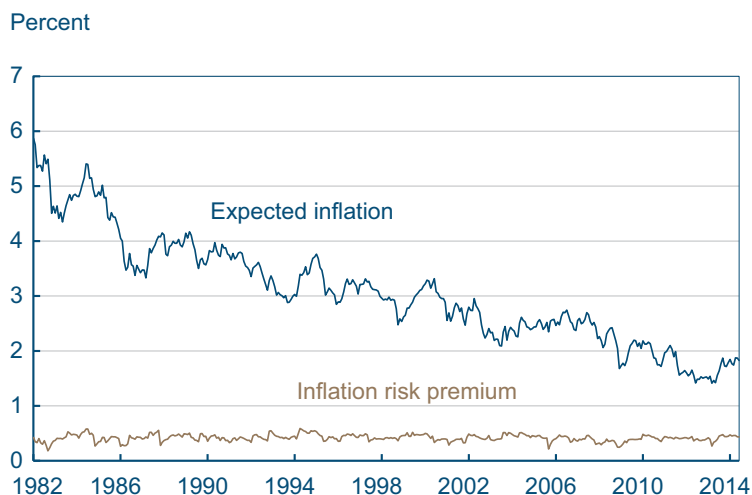
The auto loan boom, on the other hand, has not left anyone out. Although super prime borrowers have been borrowing most aggressively, the auto loan balances of the deep subprime individuals have also been showing signs of life.

These credit measures suggest that the consumer credit market is still weak outside select sectors and for borrowers at the riskier end of the credit spectrum.

Cleveland Fed Estimates of Inflation Expectations, June 2014

News Release: June 17, 2014

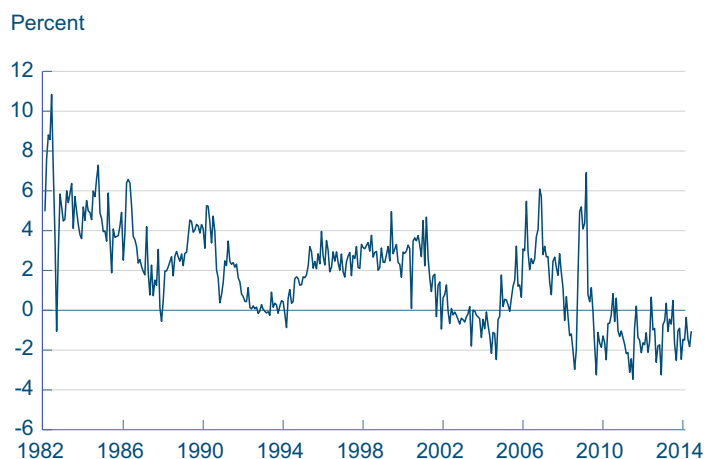
Ten-Year Expected Inflation and Inflation Risk Premium



The latest estimate of 10-year expected inflation is 1.83 percent, according to the Federal Reserve Bank of Cleveland. In other words, the public currently expects the inflation rate to be less than 2 percent on average over the next decade.

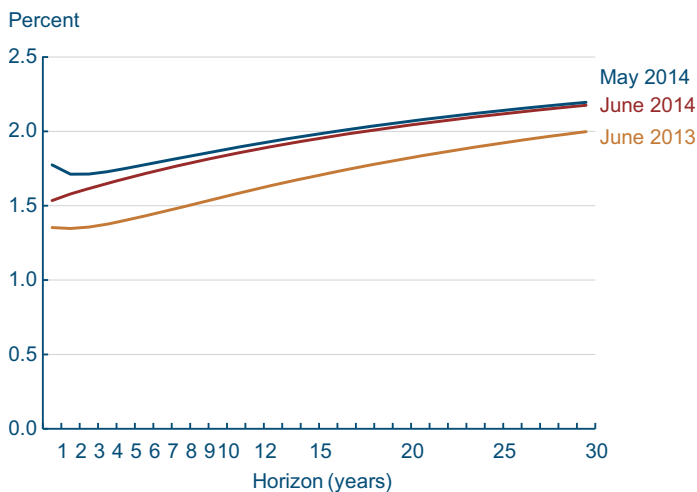
The Cleveland Fed's estimate of inflation expectations is based on a model that combines information from a number of sources to address the shortcomings of other, commonly used measures, such as the "break-even" rate derived from Treasury inflation protected securities (TIPS) or survey-based estimates. The Cleveland Fed model can produce estimates for many time horizons, and it isolates not only inflation expectations, but several other interesting variables, such as the real interest rate and the inflation risk premium.

Real Interest Rate



Source: Haubrich, Pennacchi, Ritchken (2012).

Expected Inflation Yield Curve



Source: Haubrich, Pennacchi, Ritchken (2012).

European Inflation

06.24.14

by Owen F. Humpage and Jessica Ice

At its most recent policy meeting, the European Central Bank eased monetary policy because inflation had drifted well below the ECB's target. With economic activity weak, money growth slow, and commercial-bank lending sluggish, the risk of slipping into a Japanese-style deflation seemed plausible. Prices in the euro area increased an unexpectedly low 0.5 percent on a year-over-year basis in May, indicating that inflation has been moderating for the past 2½ years. Absent the volatile food and energy components, prices have risen just above their lowest pace since the euro came into being.

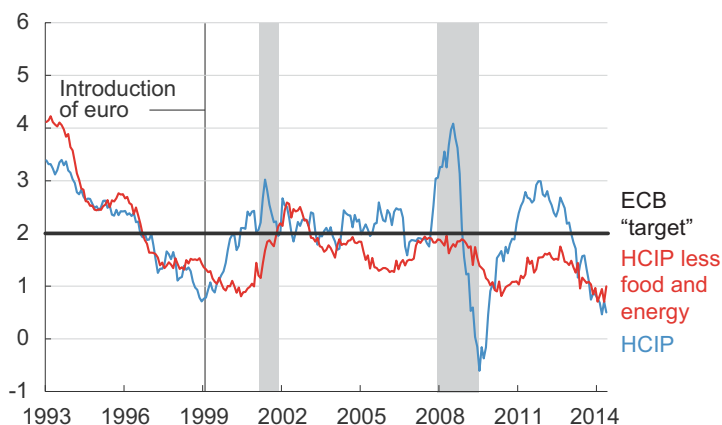
In response, the ECB lowered its key interest rates, which resulted in a negative interest rate on commercial-bank deposits at the ECB. The ECB will also institute some long-term lending facilities designed specifically to encourage bank lending to households and nonfinancial businesses and may initiate outright purchases of asset-backed securities. Hoping to keep inflation expectations anchored just below 2 percent, the ECB has promised to maintain its accommodative monetary stance until inflation moves close to that rate.

The ECB's primary policy mandate is to maintain price stability, which it defines as an inflation rate below, but close to, 2 percent over the medium term. In its assessment of price stability, the ECB considers year-over-year changes in a weighted-average consumer price index covering the entire eighteen-country euro area. This is the Harmonized Index of Consumer Prices (HICP), which apportions weights according to the relative size of countries' consumer expenditures. While the ECB does pursue other macroeconomic-policy objectives, like full employment and economic growth, these economic goals remain secondary to price stability.

This ordering of policy objectives reflects the view—one shared by most monetary economists—that maintaining price stability is the chief way that a central bank can contribute to long-term

Euro Area Harmonized Index of Consumer Prices (HICP)

Year-over-year percentage change



Note: Shaded bars indicate recessions.
Source: European Central Bank.

economic growth and to full employment. Changes in monetary policy, particularly unanticipated ones, might alter real economic activity in the short run, but not in the long run. The ECB's current policy actions, however, support both long-term price stability and short-term economic growth.

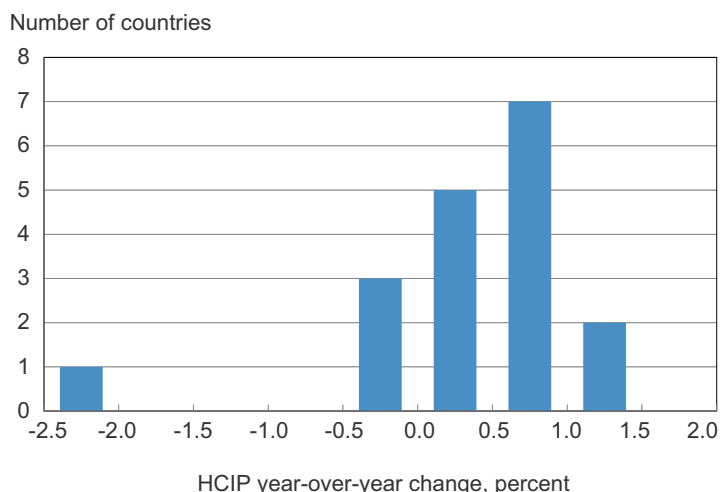
The ECB is concerned that disinflation, if not addressed, could lead to a Japanese-style deflation—an outright decline in the HICP—that becomes imbedded in the public's expectations and harms economic growth. It is a connection with a self-reinforcing potential. When individuals and businesses expect prices to fall, for example, they naturally postpone purchases and investments, if possible, but that only weakens economic activity and drives prices lower.

Deflation could also derail economic growth through its effect on the debts of households, businesses, and governments. Deflation increases the real burden of servicing debts, like credit cards, mortgages, and commercial loans. If debtors sell off assets to service these debts, asset prices can fall, causing losses and a decline in real net worth. Higher real debt burdens can also increase the incidence of default, which adversely affects financial-sector balance sheets and credit allocation. These developments, in turn, weaken economic activity, slow or contract money growth, and induce further declines in prices.

Fortunately, the ECB maintains a great deal of credibility with respect to its inflation objective. Over the 15½ years since eleven—now eighteen—European countries adopted the euro and a common monetary policy, the ECB has consistently delivered on its price stability pledge. Inflation has averaged 2 percent and has generally remained within a range of 1.2 percent to 2.8 percent.

Nevertheless, prices in the euro area have demonstrated some sharp, largely one-off, fluctuations, particularly during the recent financial crisis. Between late 2007 and early 2008, for example, the euro area's HICP increased sharply, reaching 4.1 percent in July 2008 primarily because of rising energy, agricultural, and other commodity prices. By March 2009, commodity prices were declining, and the recession was reducing other cost pressures. By

Distribution of Euro Area Inflation, May 2014

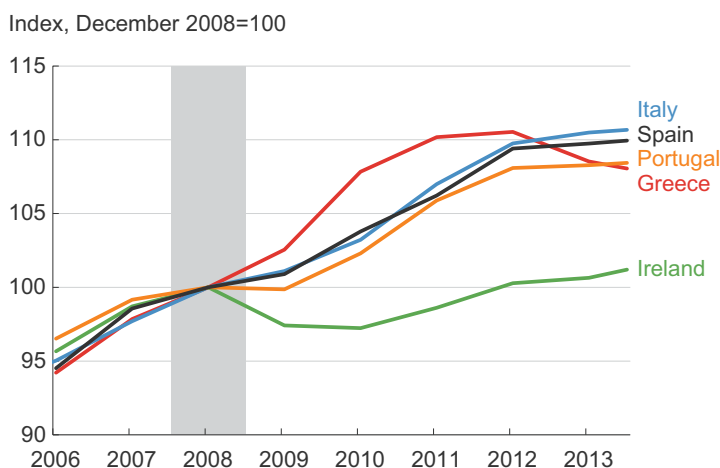


Source: European Central Bank.

May 2009, prices began to fall, and in July 2009, the HICP fell 0.6 percent on a year-over-year basis. When a central bank has achieved a reputation for price stability, deviations like these do little to damage credibility.

Price patterns among the 18 member states show a wide divergence. In Greece, for example, prices fell 2.1 percent (year over year) in May, continuing a decline that began in October 2012. Cyprus and Portugal have also experienced deflation in recent months. Price declines in these distressed economies are part of the process through which they regain their competitiveness vis-à-vis the other euro-area countries. In Austria, at the other end of the spectrum, prices have recently been rising around 1.5 percent year over year.

Prices in the Distressed European Economies



Source: European Central Bank.

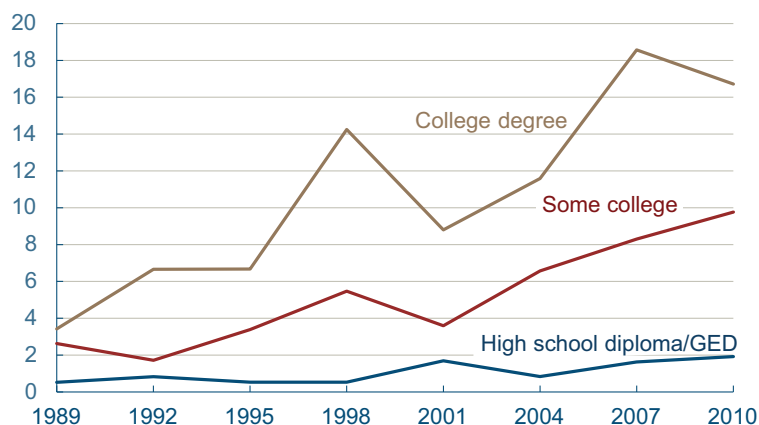
A College Education Saddles Young Households with Debt, but Still Pays Off

07.16.14

by Daniel Carroll and Amy Higgins

Average Student Loan Debt

Thousands of dollars (real dollars base year: 2010)

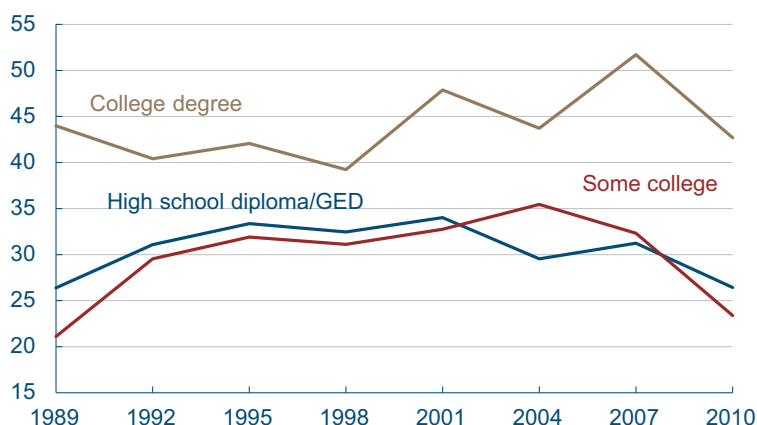


Source: Board of Governors of the Federal Reserve System's Survey of Consumer Finances.

Many parents believe their children must get a college degree—especially if they want to have at least as comfortable a lifestyle as their parents had; yet the price of a college degree has been rising rapidly over the past three decades. As costs have risen, more and more students and their families have turned to education loans for financing. This trend, combined with the strong propensity for households to form among individuals of similar education levels, has led to much larger student loan debt burdens for households headed by young adults who have attended college. In the 1989 Survey of Consumer Finances, real (inflation-adjusted) average student loan debt for young households (those headed by someone between 22 and 29 years of age) with a college degree was \$3,420. In 2010, the same average was \$16,714, nearly a 400 percent increase. For households with some college, but without a college degree, average student loan debt rose about 270 percent.

Median Wages: 22-29 Years of Age

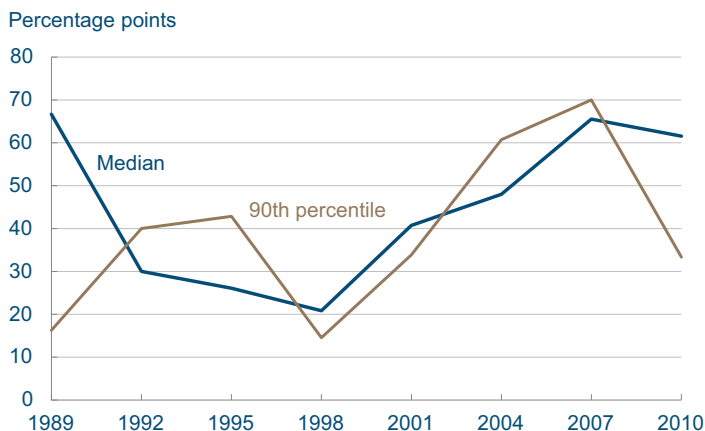
Thousands of dollars (real dollars base year: 2010)



Source: Board of Governors of the Federal Reserve System's Survey of Consumer Finances.

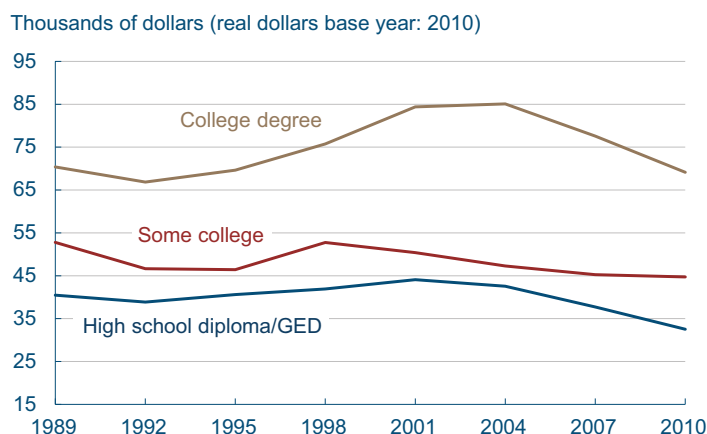
While it has become more costly to attend college, the extra education typically awards a benefit in the labor market. Households headed by an individual with a college degree earn, on average, a skill premium relative to non-college households. Real wage earnings for young households, for example, have consistently been higher for households with a college degree than for those without. In 2010, the median young household headed by a college graduate earned \$42,693 in wage income while the median non-college household earned only \$26,429, a premium of 61.5 percent. From 1989 to 2010, this premium averaged 45 percent. For young households with exceptional labor market outcomes—those in the 90th percentile of wage income within each level of educational attainment—the wage-income premium averaged 39 percent. In 2010, the difference in the 90th percentile of wage income between young college and non-college households was \$85,387 and \$64,040, respectively.

Skill Premium: 22-29 Years of Age



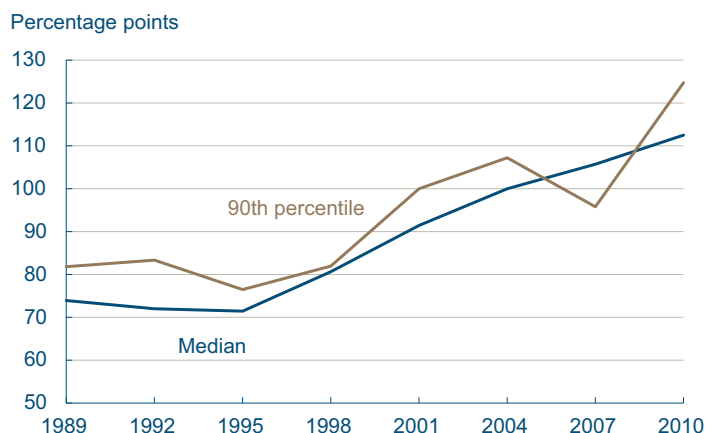
Source: Board of Governors of the Federal Reserve System's Survey of Consumer Finances.

Median Wages: 30-65 Years of Age



Source: Board of Governors of the Federal Reserve System's Survey of Consumer Finances.

Skill Premium: 30-65 Years of Age



Source: Board of Governors of the Federal Reserve System's Survey of Consumer Finances.

The labor market bonus for completing a college degree is not fully realized in the early years of working. Looking at the wage income of households headed by an individual between 30 and 65 years of age reveals a much larger premium, both at the median and the 90th percentile. In many professions, a college degree combined with work experience opens the door to senior-level administrative positions and higher salaries. The average wage-income premium among these older households was 88 percent for degree-holding median earners and 93 percent for 90th percentile earners.

In light of these data, the tradeoff seems clear. By going to college, one is likely to end up in a household that earns a considerable wage income premium throughout its working life but which also has a sizeable amount of college debt early on. There is one education group for which this does not hold: those with some college but no degree. These households, which on average make up 32 percent of those 22 to 29 years of age and 25 percent of those 30 to 65 years of age, have some college debt but get little to no labor market benefit.

For young households with some college but no degree, the wage income premium is virtually zero, averaging -3 percent for median earners and 5 percent for 90th percentile earners. Only a very small premium emerges later in life. Among older households, the average premium was 22 percent at the median and 17 percent at the 90th percentile.

Yield Curve and Predicted GDP Growth, June 2014

Covering May 24, 2014–June 20, 2014
by Joseph G. Haubrich and Sara Millington

Highlights

	June	May	April
Three-month Treasury bill rate (percent)	0.03	0.03	0.03
Ten-year Treasury bond rate (percent)	2.63	2.54	2.71
Yield curve slope (basis points)	260	251	268
Prediction for GDP growth (percent)	1.4	1.5	1.5
Probability of recession in one year (percent)	1.99	2.31	1.78

Sources: Board of Governors of the Federal Reserve System; authors' calculations.

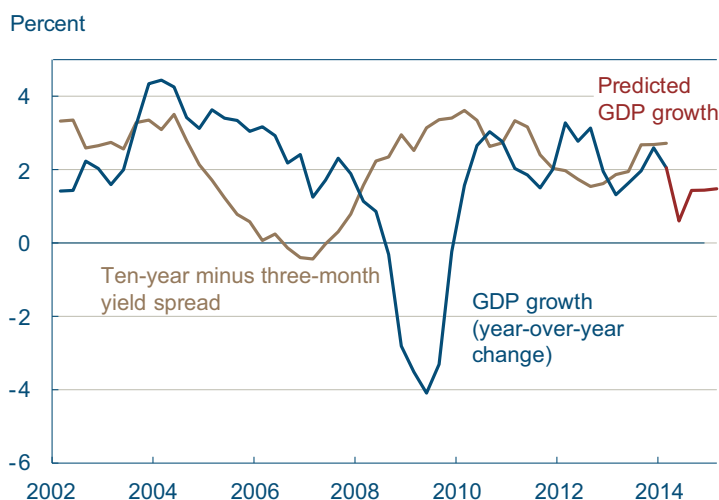
Overview of the Latest Yield Curve Figures

Since last month, the yield curve pivoted back upward around the short end. The three-month (constant maturity) Treasury bill rate stayed fixed at 0.03 percent (for the week ending June 20), even with April and May's 0.03 percent. The ten-year rate (also constant maturity) increased to 2.63 percent, up 9 basis points from May's 2.54 percent, but still down from April's level of 2.71 percent. The pivot increased the slope back up to 260 basis points, above May's 251 basis points, though down from the April level of 268 basis points. By recent standards, the yield curve remains steep, as the mean slope since 2000 has been 193 basis points (median of 218).

The steeper slope had a small impact on projected future growth. Projecting forward using past values of the spread and GDP growth suggests that real GDP will grow at about a 1.4 percentage rate over the next year, even with May's rate and just down from April's rate of 1.5 percent. The influence of the past recession continues to push towards relatively low growth rates. Although the time horizons do not match exactly, the forecast comes in slightly more pessimistic than some other predictions, but like them, it does show moderate growth for the year.

The slope change had only a slight impact on the probability of a recession. Using the yield curve to predict whether or not the economy will be in a recession in the future, we estimate that the expected chance of the economy being in a recession next June at 1.99 percent, down a bit from May's reading of 2.31 percent, but up a bit from April's probability of 1.78 percent. So although our approach is somewhat pessimistic with regard to the level of growth over the next year, it is quite optimistic about the recovery continuing.

Yield Curve Predicted GDP Growth



Sources: Bureau of Economic Analysis, Board of Governors of the Federal Reserve System, authors' calculations.

The Yield Curve as a Predictor of Economic Growth

The slope of the yield curve—the difference between the yields on short- and long-term maturity bonds—has achieved some notoriety as a simple forecaster of economic growth. The rule of thumb is that an inverted yield curve (short rates above long rates) indicates a recession in about a year, and yield curve inversions have preceded each of the last seven recessions (as defined by the NBER). One of the recessions predicted by the yield curve was the most recent one. The yield curve inverted in August 2006, a bit more than a year before the current recession started in December 2007. There have been two notable false positives: an inversion in late 1966 and a very flat curve in late 1998.

More generally, a flat curve indicates weak growth, and conversely, a steep curve indicates strong growth. One measure of slope, the spread between ten-year Treasury bonds and three-month Treasury bills, bears out this relation, particularly when real GDP growth is lagged a year to line up growth with the spread that predicts it.

Predicting GDP Growth

We use past values of the yield spread and GDP growth to project what real GDP will be in the future. We typically calculate and post the prediction for real GDP growth one year forward.

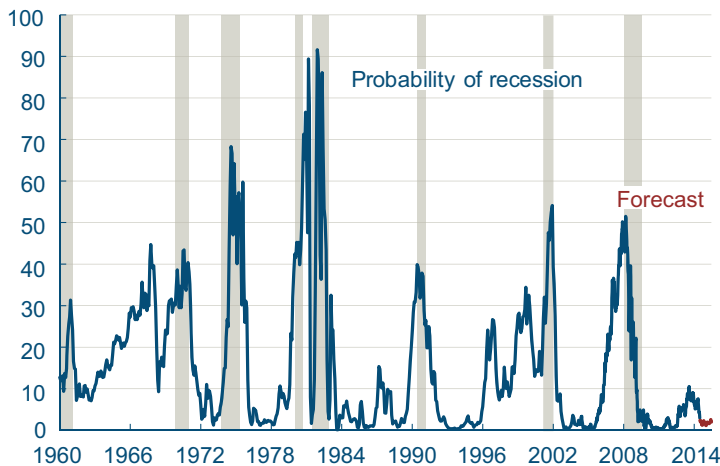
Predicting the Probability of Recession

While we can use the yield curve to predict whether future GDP growth will be above or below average, it does not do so well in predicting an actual number, especially in the case of recessions. Alternatively, we can employ features of the yield curve to predict whether or not the economy will be in a recession at a given point in the future. Typically, we calculate and post the probability of recession one year forward.

Of course, it might not be advisable to take these numbers quite so literally, for two reasons. First, this probability is itself subject to error, as is the case with all statistical estimates. Second, other researchers have postulated that the underlying

Recession Probability from Yield Curve

Percent probability, as predicted by a probit model

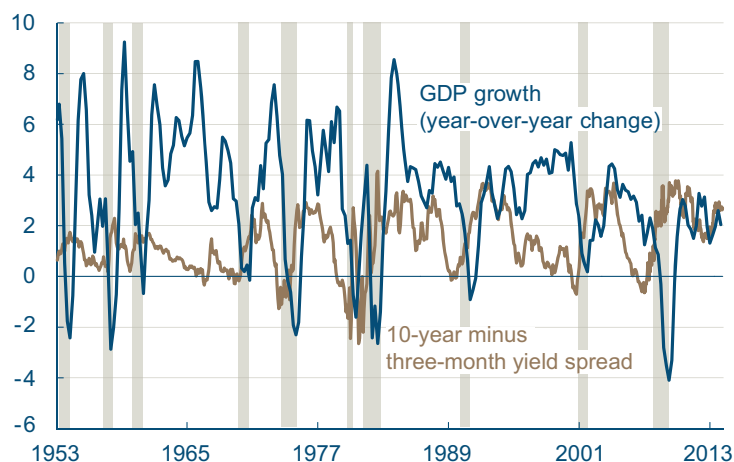


Note: Shaded bars indicate recessions.

Sources: Bureau of Economic Analysis, Board of Governors of the Federal Reserve System, authors' calculations.

Yield Curve Spread and Real GDP Growth

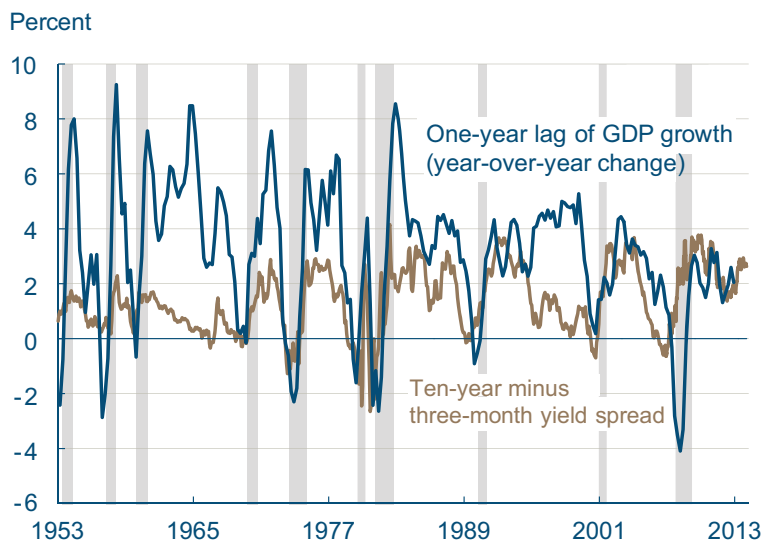
Percent



Note: Shaded bars indicate recessions.

Source: Bureau of Economic Analysis, Board of Governors of the Federal Reserve System.

Yield Spread and Lagged Real GDP Growth



determinants of the yield spread today are materially different from the determinants that generated yield spreads during prior decades. Differences could arise from changes in international capital flows and inflation expectations, for example. The bottom line is that yield curves contain important information for business cycle analysis, but, like other indicators, should be interpreted with caution. For more detail on these and other issues related to using the yield curve to predict recessions, see the Commentary “Does the Yield Curve Signal Recession?” Our friends at the Federal Reserve Bank of New York also maintain a website with much useful information on the topic, including their own estimate of recession probabilities.

Neighborhood Gentrification during the Boom and After

07.16.14

by Daniel Hartley and Daniel Kolliner

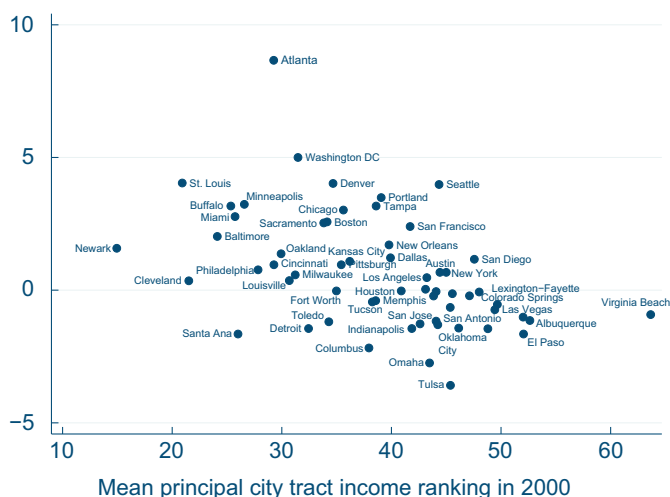
During the housing boom, a number of large cities in the United States experienced redevelopment in their lower-income neighborhoods as higher-income residents moved in, a process known as gentrification. Looser lending standards, which were prevalent at the time, may have contributed to the trend. Since lending standards have tightened with the onset of the housing bust and the financial crisis, we wondered whether gentrification has continued after the recession in places where it was happening before.

To answer this question, we examined how the income rankings of neighborhoods in the centers of metropolitan areas have changed relative to those in the suburbs since 2000. Looking at how average incomes have shifted in city neighborhoods compared to the suburbs allows us to see which metropolitan areas are experiencing income growth in their core relative to their periphery. We find that for the cities with the largest gains, the growth is driven primarily by lower-income city neighborhoods moving up in the income distribution of the metropolitan area. Such a pattern is consistent with gentrification, where higher-income residents move in to formerly low-income neighborhoods.

We selected a set of 59 large cities, all of which had a population above 250,000 in the year 2000 and the largest population of their respective metropolitan area (many metro areas include more than one city). Then we ranked the census tracts of each metropolitan area by the average income of residents in the tracts. The rankings are percentiles, running from 1 to 100. Finally, we took the mean of these rankings for the tracts that are located in the largest city of the metropolitan area (referred to as the principal city in the charts below). This mean gives a sense of where the tracts of the largest city as a whole fall in the income distribution of the metropolitan area. For example, the average tract in the city of Virginia Beach was at the 66th percentile of all of the tracts in the Virginia Beach-Norfolk-New-

Changes in Mean Income

Change in income ranking, 2000–2007



Source: Census 2000, American Community Survey 2005-2009 estimates.

port News metropolitan statistical area, while the average tract in the city of Newark was at the 18th percentile in the Newark, NJ-PA metropolitan division. This means that the average tract in Virginia Beach is higher income than the average suburban tract, while the opposite is true in Newark.

To get a sense of the degree to which center-city neighborhoods are moving up in income rankings compared to their suburbs, we look at how these means have changed over time. We use tract-level data from the 2000 Census, the 2005-2009 American Community Survey, and the 2008-2012 American Community Survey, though for simplicity we refer to the periods these data cover as 2000, 2007, and 2010.

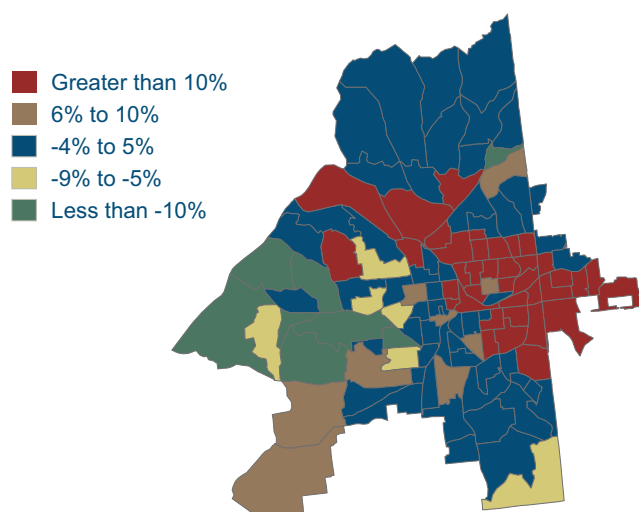
From 2000 to 2007 Atlanta showed the largest increase in mean income ranking of all the 59 cities, moving up 8.7 percentiles. Washington was second with an increase of 5.0 percentiles. The biggest drops were in Tulsa (-3.6) and Omaha (-2.7).

From a map of income rankings in the city we can gather where the income shifts are occurring. In Atlanta, income is rising, relative to the metropolitan area, near the central business district, in midtown, and on the east side.

To examine whether the gentrification trends of the pre-recession boom period extended into the bust and recovery, we plot the changes in the mean income ranking from 2007 to 2010 against the changes in the mean income ranking from 2000 to 2007. It should be noted that we might expect to see smaller changes in income from 2007 to 2010 since it is a period of only three years, while 2000 to 2007 is seven years. We must make do with the shorter post-boom period, since that is the extent of the tract-level data that is available.

For a few cities (Denver, Minneapolis, Portland, Seattle, and Washington), the increase in income ranking continued after the boom, rising 2 to 3 percentiles from 2007 to 2010. By contrast, the large increases in income ranking in the city of Atlanta during the boom years were not matched in the subsequent period. Another interesting case is Cincinnati, which barely changed in income rank-

Changes in City of Atlanta Income Ranking, 2000 to 2007



Source: Census 2000, American Community Survey 2005-2009 estimates.

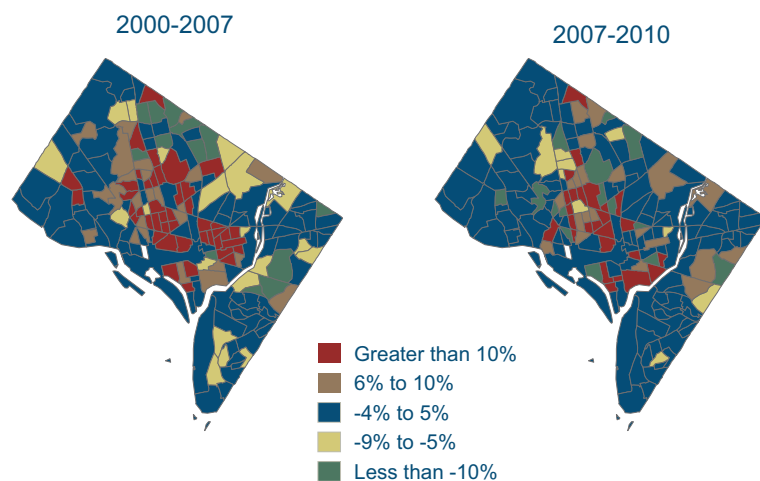
Changes in Mean Income

Change in income ranking, 2007–2010



Source: Census 2000, American Community Survey 2005–2009 Estimates, American Community Survey 2008–2012 Estimates.

Changes in Income Rank: Washington, DC



Sources: Census 2000, American Community Survey 2005–2009 estimates; American Community Survey 2008–2012 estimates.

ing from 2000 to 2007 but has increased at a pace similar to Denver or Washington during the 2007 to 2010 period.

In Washington, the city center's income growth is more pronounced from 2000–2007; however, the same general trend occurs from 2007–2010. The tracts located in the middle of the city have had larger changes in income ranking for both periods. Surrounding the middle of the city are areas where the income ranking has declined or grown slowly.

In order to get a sense of whether the changes in income rankings of the center cities that we observe are being driven by neighborhoods that were initially lower income or initially higher income, we also looked at the changes in income ranking using only low-income census tracts (those that were in the bottom half of the metropolitan-area distribution). Much of the mean change in income rankings in the large cities we studied is being driven by lower-income neighborhoods moving up in the distribution, a pattern consistent with gentrification.

It appears that gentrification continued despite the bust in cities such as Denver, Minneapolis, Portland, Seattle, and Washington, while in Atlanta it ground to halt. The variation may be due to the fact that the financial crisis and housing bust had different effects on different industries. Since metropolitan areas specialize in different things, the effects of the crisis and bust played out in different ways across regions.

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