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Structural and Cyclical Economic Factors

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The recent recession and recovery raise important questions about the relative weight of structural and cyclical factors in the economy. A recent San Francisco Federal Reserve Bank conference explored the extent to which different economic variables behaved in a standard cyclical fashion during this episode or were scarred in a more permanent, structural manner. Both cyclical and structural effects appear evident in the recession, suggesting that some features of the U.S. economy can benefit from stimulatory monetary and fiscal policy, while others are more permanently damaged and unlikely to respond to such policies.

This Economic Letter summarizes papers presented at the “Structural and Cyclical Elements in Macroeconomics” conference, March 16, 2012, at the Federal Reserve Bank of San Francisco. Conference papers are available [online](#).

The severity of the 2007–09 recession and sluggishness of the subsequent recovery have led many economic analysts to question whether part of the decline in output and employment might be structural rather than cyclical. A structural change in the economy is one that is permanent or very long-lived, while a cyclical disturbance tends to return to its previous level over a few years.

For example, many lenders underestimated the risks of subprime mortgages and mortgage-backed securities prior to the recession. As a result, subprime mortgage lending standards will probably not return to pre-recession levels within the next few years, if ever, representing a structural rather than a cyclical change. If mortgage lending standards are tighter, then a substantial part of the recession’s decline in homebuilding is also likely to be structural rather than cyclical. Moreover, part of the large decline in employment during the recession may be structural because many residential construction workers must now find jobs in different fields for which they may be less well-qualified.

The extent to which a given change in the economy is structural rather than cyclical has important implications for monetary and fiscal policy. Structural changes are more permanent and cannot be offset very well by these policies. On the other hand, cyclical declines in output or employment are only temporary. Thus, monetary and fiscal stimulus can help speed the transition back to pre-recession levels.

Papers presented at the San Francisco Fed's annual macroeconomics conference considered different aspects of structural and cyclical changes in the economy, and their implications for the ongoing economic recovery.

Estimating structural and cyclical changes in output and employment

Breaking down changes in output or employment into structural and cyclical components is very difficult, since these elements are not directly observable. Two papers at the conference applied cutting-edge methods to this question, providing estimates of the structural and cyclical components of the 2007–09 recession's large employment and output declines.

Chen, Kannan, Loungani, and Trehan use differences in stock market returns across industries to help identify the magnitudes of cyclical and structural shocks to the economy. The idea is that periods when stock returns across different industries are highly dispersed are times that some sectors of the economy face worse prospects than others. Moreover, permanent changes in the outlook for a given industry should affect stock prices in that industry to a greater extent than would temporary changes, because permanent changes will affect the industry's profits for longer than temporary ones. Thus, when cross-industry differences in stock returns are very large, we would expect some industries to be shrinking and laying off workers in the near future. Workers in those industries would have to find jobs in other sectors of the economy—a structural shift in employment and output.

Homebuilding offers an example. Homebuilder stock prices declined relative to the rest of the market in 2005, 2006, and 2007, a sign of growing troubles in that industry. Soon after, homebuilders carried out layoffs and downsizing that were large relative to the rest of the economy.

Chen and coauthors collected cross-industry stock return data from 1962 to 2011, which they use to construct an index of stock return dispersion across industries. The authors then estimate the typical response of output and employment to sudden changes in this index, providing an approximation to the effects of structural shifts on the economy. The authors find that such structural shifts account for about 25% of U.S. output and employment fluctuations since 1962. The remaining 75% is due to cyclical factors. The effects of structural shocks on long-term unemployment are larger, amounting to about 40% of the increase in long-term unemployment during the 2007–09 recession.

Fleischman and Roberts take a different approach, using a purely statistical technique called the Kalman filter. Their innovation is to use the interrelationships across several economic data series to get better estimates of the structural and cyclical components of each. For example, in addition to gross domestic product (GDP), the authors look at gross domestic income, nonfarm business output, several measures of employment, and productivity.

Fleischman and Roberts also exploit the fact that there is an accounting identity among employment, hours per worker, productivity, and output in the nonfarm business sector, namely, that productivity is defined to equal output divided by total hours worked. Taking advantage of these relationships across data series helps the authors identify the structural trends in all the series. Fleischman and Roberts estimate that almost all the recent declines in output and employment are due to cyclical rather than structural factors. Thus, the authors find that cyclical factors are even more important than Chen and coauthors do.

Structural and cyclical variation in the U.S. saving rate

Carroll, Slacalek, and Sommer analyze the large increase in the U.S. household saving rate during the 2007–09 recession. A main focus of their investigation is whether the increase in saving is cyclical—and thus likely to be reversed during the recovery—as opposed to structural. The answer has important implications for consumption and GDP, since income that is saved is not consumed, and consumption comprises roughly two-thirds of GDP.

Carroll and coauthors find that three factors explain the vast majority of the large swings in the U.S. saving rate since 1960: credit availability, uncertainty, and household net worth. They find that increases in credit availability account for most of the long-term decline in the U.S. saving rate, while fluctuations in uncertainty and net worth account for most of the variation in saving over past business cycles. However, the authors conclude that much of the increase in the saving rate in the 2007–09 recession is structural rather than cyclical because credit availability and household net worth seem unlikely to return anytime soon to their peaks registered during the mid-2000s housing boom.

The role of deleveraging and financial frictions in the recession

The financial crisis of 2008 led to a severe contraction in lending and credit, forcing households and businesses to deleverage by paying down debt or defaulting. Tighter credit also greatly increased the frictions in the financial system, making it harder for companies to do business. Hall investigates the role that deleveraging and financial frictions played in the recession of 2007–09 and its aftermath. Importantly, Hall’s analysis uses a model that allows for both structural and cyclical effects of these factors.

Hall finds that, after the crisis, the sharp increase in household deleveraging had an important but relatively short-lived effect on unemployment, consumption, and other macroeconomic variables. By contrast, Hall finds that the post-crisis increase in financial frictions was more important and led to much longer-lasting increases in unemployment and longer-lasting declines in GDP and investment. Thus, the increase in financial frictions and its repercussions represent a more structural shock to the economy than the increase in household deleveraging, implying correspondingly longer-lived and more pernicious effects.

Asset price booms and busts resulting from structural and cyclical factors

The studies discussed above show that it can be very difficult to decompose economic series into structural and cyclical components. Fuster, Hebert, and Laibson show that investor errors in estimating these structural and cyclical factors can explain a great deal of asset price volatility. They begin with a model in which macroeconomic fundamentals respond in a hump-shaped manner to economic shocks—that is, first rising, then falling, a standard pattern in many macroeconomic variables. If investors extrapolate from simple models to forecast fundamentals, they will tend to overestimate the future path of fundamentals shortly after a positive shock. Such overestimation can lead to an asset price boom.

Of course, when fundamentals begin to fall back—the downhill side of the hump—investors in the model recalibrate their expectations and forecast a future path of fundamentals that is overly pessimistic. This leads to an asset price crash. Fuster and coauthors show that this simple model matches many empirical asset pricing facts, such as the excess volatility of asset prices and large returns to holding stocks over the long term. The authors also show that excessive volatility in financial markets leads to excessive swings in macroeconomic variables such as GDP, consumption, and employment.

Conclusion


Disentangling structural and cyclical factors in the economy is difficult, yet has important implications for the strength of the current economic recovery. Research presented at the San Francisco Fed’s annual macroeconomics conference came to varied conclusions, depending on the methods used and the features of the economy studied. Both cyclical and structural factors seem to have played an important role in the recession. Some features of the economy, such as output and the overall unemployment rate, seem to reflect primarily cyclical disturbances and should continue to recover toward pre-crisis levels. However, other features, such as the household saving rate, employment in the homebuilding sector, and financial frictions, seem to be driven more by structural changes and may never return to their pre-2007 levels.

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Conference papers

Carroll, Christopher, Jiri Slacalek, and Martin Sommer. 2012. "Dissecting Saving Dynamics: Measuring Credit, Wealth and Precautionary Effects." Manuscript.

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Fuster, Andreas, Benjamin Hebert, and David Laibson. 2011. "Natural Expectations, Macroeconomic Dynamics, and Asset Pricing." Manuscript.

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