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Why Has Output Become Less Volatile?

Over the past twenty years, output growth in the U.S. has become noticeably less volatile. During that time, the economy has experienced two recessions, compared with four in each of the two preceding twenty year periods. Further, the loss in output during the last two recessions has been smaller than what prior experience would lead one to expect. Moreover, the reduction in output volatility is not confined to business cycle frequencies. This can be seen in Figure 1, which shows the standard deviation of real output growth over the previous 20 quarters for each quarter over the 1950:Q1–2005:Q2 period.

Does the reduction in volatility represent some kind of fundamental, structural change in the economy? Or is it the result of good policy? Or is it the result of good luck? These are the questions that economists are debating in the research literature. Several different arguments have been put forward, but as yet there is no agreement on the cause or causes of the reduced volatility. This *Economic Letter* reviews and discusses these arguments.

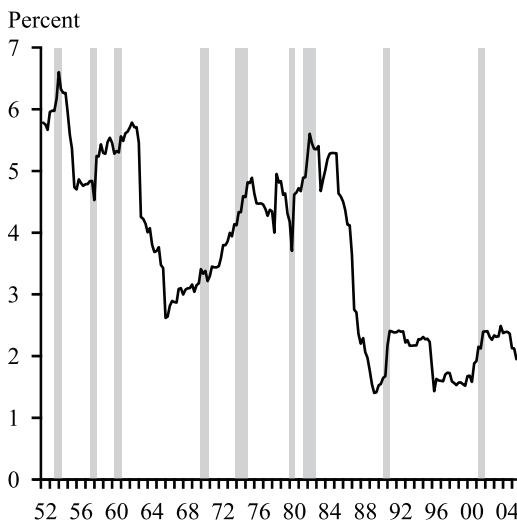
Structural change

McConnell and Perez-Quiros (2000) were among the first to document and discuss the reasons for the decline in the volatility of U.S. output. They first showed that there had been a statistically significant break in the volatility of real output growth in early 1984. Disaggregating the data into output of goods and output of services, they then showed that the decline in volatility was concentrated in the goods sector of the economy and, within that, in the durable goods sector.

Next, they looked at the behavior of sales, both for durable goods and for all goods and services. They found no change in the volatility of either series, implying that it was the behavior of inventories that had changed over time. A direct test on the behavior of inventories confirmed this hypothesis. Subsequently, Kahn, McConnell, and Perez-Quiros (2002) argued that the reduction in the volatility of inventories resulted from improvements in inventory management techniques that were influenced by advances in information technology.

Others have suggested that recent changes in financial markets may have played a key role. Helped by explosive growth in information technology, financial markets have become much broader and deeper.

Figure 1
Volatility of GDP growth



Note: See text for details. Gray bars denote recessions.

Economic theory tells us that individuals with increased access to financial markets will be better able to weather shocks to income, because they can borrow to maintain consumption during periods when income is low. Indeed, in a recent paper, Dynan, Elmendorf, and Sichel (DES, 2005) find that consumption has become less sensitive to unusually weak income growth, while there has been no change in sensitivity to unusually strong income growth.

DES argue that changes in government regulations may have contributed to the reduction in output volatility as well. They highlight the role of Regulation Q (or Reg Q, as it is known), which limited the maximum interest that banks could pay on deposits until the early 1980s. When interest rates rose sufficiently above these limits, depositors would respond by withdrawing money out of banks, forcing banks to curtail lending sharply. Housing was hit particularly hard by this “disintermediation.” Once the ceilings on deposit rates were removed, banks were able to respond to rising market rates by raising the rates they offered as well, which would prevent a large-scale withdrawal of deposits and allow banks to continue to offer loans for housing (as well as for other purposes), though at higher interest rates. Consistent with this hypothesis, there has been a substantial decline in the volatility of residential investment since 1984. DES also present some evidence showing that a statistical measure related to Reg Q plays a signifi-

cant role in explaining residential investment prior to 1984.

Better policy

Another group of economists argues that improvements in the conduct of policy are the main reason why output has become less volatile. By the end of the 1970s, the inflation rate had risen into the double digits and appeared on the verge of rising further. Output growth had been unusually volatile as well, as the economy experienced a recession in the late 1960s and another in the early to mid-1970s, interspersed with periods of strong growth. The Fed changed the way it conducted policy in 1979. Following a deep recession in the early 1980s, inflation fell by a substantial amount. Clarida, Galí, and Gertler (2000) analyze the behavior of the Fed both before and after this change and conclude that prior to 1979 the Fed did not raise rates to keep pace with increases in expected inflation; in other words, the Fed allowed real (or inflation adjusted) rates to decline, and, since lower real interest rates tend to boost economic activity, the result was an unsustainable boom in output. Since the early 1980s, the Fed has tended to raise both real and nominal rates in response to a change in expected inflation, which has the effect of keeping inflation contained as well as preventing destabilizing increases in output.

The role of policy has also been emphasized by Bernanke (2004), a former member of the Federal Reserve Board of Governors, who argued that during the late 1960s and early 1970s, policymakers became excessively optimistic about the ability of monetary policy to affect output and unemployment. Attempts to achieve higher output led to rising inflation, which policymakers would periodically try to reverse by tightening policy. This would lead to a sharp contraction in output. Policy would respond by going back to stimulating output, and the cycle would begin again. This process tended to make output growth more volatile than it would be otherwise. Since that time, the idea that monetary policy cannot have a permanent effect on the level of output has become generally accepted, as has the principle that monetary policy is likely to make a larger contribution to sustainable economic growth by delivering a low and stable inflation rate. So policy does not tend to destabilize output as it did in the late 1960s and the 1970s.

Good luck

Many economists disagree with the claim that improved monetary policy is the main reason for the reduction in volatility. Some of them argue that the volatility of output was high in the 1970s because the economy was subject to unusually large shocks, and smaller shocks since then are the reason why the variability of output has fallen. Thus, the improved

performance of the economy is a matter of good luck rather than good policy. Ahmed, Levin, and Wilson (ALW, 2004), for instance, point out that if improved monetary policy were the main reason for the reduction in output volatility, we should expect to see the reduction in volatility concentrated at business cycle frequencies. That turns out not to be the case. Although business cycles do appear to have become more damped of late, the reduction in volatility at these frequencies is not noticeably greater than the reduction in the volatility of quarter-to-quarter changes in output (for example).

Based on their statistical analysis, ALW conclude that somewhere between 50% and 75% of the reduction in output volatility since the 1970s can be attributed to “good luck” with the remainder attributable to improved policy as well as changes in business practices. Interestingly, they also find that the decline in *inflation* variability over this period cannot be attributed to smaller shocks, but is mostly due to improved policy. Stock and Watson (2003) reach a similar conclusion; further, they show that output volatility has fallen not only in the U.S., but also in the other G-7 countries. Based on their statistical analysis, they conclude that the most important reason for the decline in volatility across these countries is a reduction in common international shocks.

The debate continues

These issues are far from settled. Bernanke (2004) argues that changes resulting from better monetary policy could appear to be the effects of structural change in the economy or even the results of smaller shocks. For example, the prices of oil and commodities have remained volatile even after the 1980s (in fact, we are experiencing an unusually large increase in oil prices now). However, because inflation remains low and because inflation expectations are stable, these increases have not been passed on to other prices in the way that they were during the 1970s. According to Bernanke, an analyst who did not take these changes into account could mistakenly conclude that the shocks were smaller or that the structure of the economy had changed in such a way that oil and other commodity price shocks had become less important. Similarly, based on an analysis of the yield curve, Rudebusch and Wu (2005) argue that a favorable change in economic dynamics, likely linked to a shift in the monetary policy environment, appears to have played an important part in the reduction in volatility that some have labeled the Great Moderation.

Other researchers have disputed the Kahn, McConnell, and Perez-Quiros conclusion that the reduction in output volatility reflects an improvement in inventory management techniques. Using more disag-

gregated data and sometimes different techniques, these researchers argue that the decline in volatility is not confined to inventories alone but can also be seen in the data on sales. Many others have joined the debate, too many to mention here.

To a considerable extent, the debate now seems to be about the relative importance of the different factors that we have discussed so far. Structural change is an ongoing process, and, to the extent that it improves the ability of consumers and firms to deal with various shocks, it could be responsible for the downward trend in volatility since the 1950s that is evident in the figure. Against this background, the increase in volatility in the 1970s could reflect the unfortunate confluence of both policy mistakes and large shocks (some of which affected more than just the U.S.). Thus, the unexpected and hard to detect productivity slowdown of the 1970s appears to have occurred at a time when policymakers had an exaggerated sense of their ability to control output. Existing regulations such as Reg Q may have made things worse in an environment of high and volatile inflation. And rising commodity prices not only may have reflected both rising inflation and inflation expectations but also may have fed back into the inflation process.

Even if several different forces have contributed to the decline in volatility, determining their relative importance remains an important task. That's because whether the reduction in volatility is permanent or temporary depends upon the reasons behind it. The volatility of output is more likely to increase again if a reduction in the size or number of shocks hitting the economy is the main reason behind the recent decline. After all, good luck cannot be expected to continue forever. But if structural changes in the economy are the reason for the reduction in volatility, then a return to the high volatility of the 1970s is much less likely.

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