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## SPECIAL REPORTS

### Heroes of the zeroes

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#### Central bankers are acclaimed for their part in taming inflation. They deserve to be

JOHN MAYNARD KEYNES thought that economics should be a technical profession. "If economists could manage to get themselves thought of as humble, competent people on a level with dentists," he wrote, "that would be splendid!" If any economists have deserved this white-coated reputation for proficiency in their trade, it is probably those in charge of central banks. Yet the chief of their number, Mr Greenspan, instead achieved near-divine status as chairman of the Fed. Rather than being granted technocratic anonymity, he was sought out for his wisdom on almost any subject. He was feted as a maestro and a seer. The more mystifying his famously Delphic utterances, the more his powers seemed to grow. It was an odd way to run an economy.

Perhaps, though, deification was a populist acknowledgment of the feat that central bankers have pulled off over the past quarter-century. Getting inflation under control was a truly great achievement. Few places gained more from this than America did. In the past couple of decades its economy has grown fast and steadily. The hiccups, in 1991 and 2001 when growth stalled, were noteworthy chiefly for their shallowness and brevity. And America was not alone in its good fortune. Something similar happened in 16 out of 25 OECD economies, including Britain, Germany, Spain and Australia, according to a study published last year by Stephen Cecchetti, of Brandeis University, Alfonso Flores-Lagunes, of the University of Arizona, and Stefan Krause, of Emory University.

Technology and financial innovation have played their part in this "Great Moderation". An efficient supply chain helps, for instance, by keeping stocks low and telling companies sooner and in more detail what people are buying. Similarly, credit markets (when they work) help people and firms even out changes in their spending power.

But central bankers can also share in the credit for smoothing the cycle, because they helped squeeze inflation out of the system. The worrying thing is that, unlike advances in technology, the hard-fought lessons of monetary policy can all too easily be forgotten—especially in a slowing economy. In the short run, loosening policy too much after this summer's turmoil could send inflation expectations back up. Once lost, credibility is hard to regain.

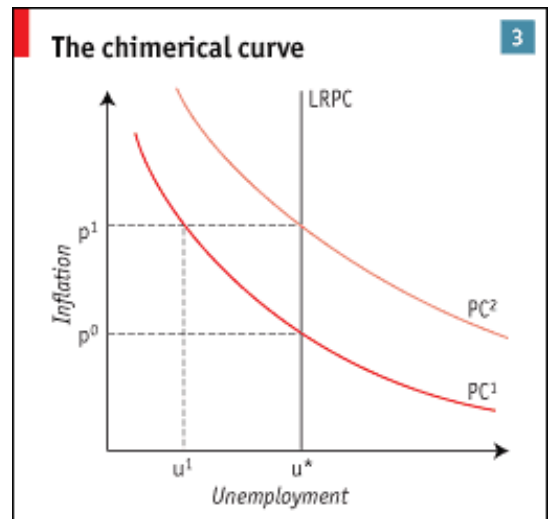
That may seem a fatuous warning just now, with inflation, on the Fed's preferred measure, at only 1.8% in August. It may also seem unnecessary. When America's Federal Open Market Committee cut rates, after more than a month of market turmoil and worsening news about the housing market and the broader economy, it was careful to point out that "some inflation risks remain" and to stress that it "will continue to monitor inflation developments carefully". Central bankers are every bit as wedded to the fight against inflation as they ever were.

But there are longer-term threats, too. Mr Greenspan thinks that his successors will have a harder time

controlling inflation than he did. In his new book, Mr Greenspan writes that globalisation was a disinflationary force during his time in office: "A billion workers, many well educated, all low-paid, began to gravitate to the world competitive marketplace." Cheap imports displaced domestic production in richer countries, or threatened to do so, subduing wage demands, inflation and inflation expectations. Ultimately, inflation depends on monetary policy; but Mr Greenspan believes that globalisation helped him.

In future, he fears, it may not be so benign to monetary policymakers. One day the flow of workers from emerging economies to competitive labour markets will slow. The downward pressure on rich-world wages—and prices—will lift, and globalisation will become an inflationary force instead.

Central bankers have a lot to lose if they slacken their grip. To see just how much, it is well worth delving into the abstruse technicalities of the statistical link between inflation and unemployment known as the Phillips curve. Bill Phillips, a New Zealander who taught at the London School of Economics, discovered a stable relationship between the rate of inflation (of wages, to be precise, rather than consumer prices) and unemployment in Britain over a long period, from the 1860s to the 1950s. Higher inflation, it seemed, went with lower unemployment. To the economists and policymakers of the 1960s, keen to secure full employment, this offered a seductive trade-off: lower unemployment could be bought at the price of a bit more inflation.



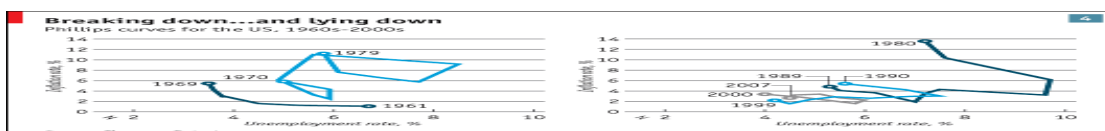
### Flattening and flattering

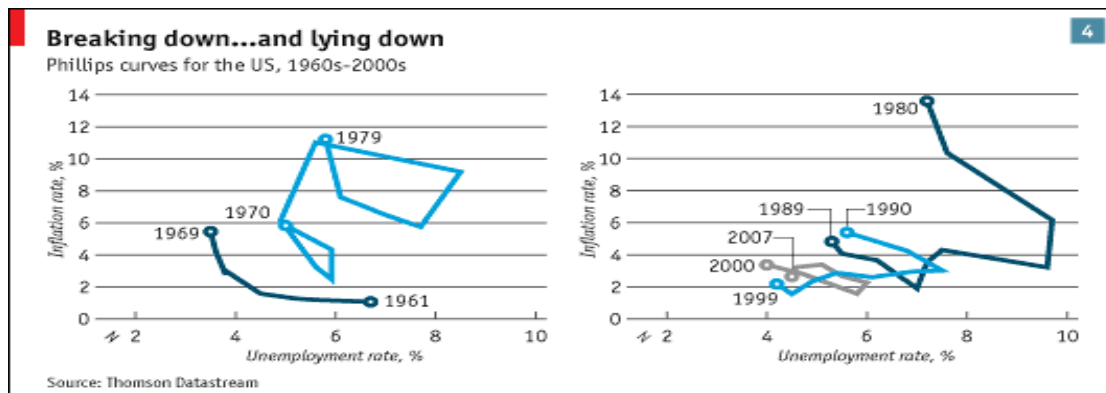
In the late 1960s, however, the Phillips curve suffered devastating assaults—first from theory, then from fact. Separately, two American economists, Milton Friedman and Edmund Phelps (who both later picked up Nobel prizes, partly for this work), pointed out that the trade-off was only temporary.

In his version, Friedman coined the idea of the "natural" rate of unemployment—the rate that the economy would come up with if left to itself. Now economists are likelier to refer to the NAIRU (non-accelerating inflation rate of unemployment), the rate at which inflation remains constant.

Suppose that at first unemployment is at the NAIRU,  $u^*$  in chart 3, and inflation is at  $p^0$ . Policymakers want to reduce unemployment, so they loosen monetary policy: that stimulates spending, so that unemployment goes down, to  $u^1$ . Inflation rises to  $p^1$ , along the initial short-run Phillips curve,  $PC^1$ . But that raises inflationary expectations, so that workers demand higher wage increases and real wages rise again. Firms shed labour, returning unemployment to  $u^*$ , but with a higher inflation rate,  $p^1$ . The new short-run trade-off is worse, with higher inflation for any level of unemployment ( $PC^2$ ). In the long run the Phillips curve is vertical (LRPC).

Remarkably, Mr Friedman and Mr Phelps made their criticisms before they were vindicated by the facts. But the facts were not long in coming. As inflation and unemployment rose in the late 1960s and 1970s, the curve steepened, or even sloped upwards (see chart 4, left-hand panel).





Robert Lucas, another eventual Nobel laureate, took the theoretical assault a stage further. The Phillips curve, said Mr Lucas, was a mere statistical regularity—a “reduced-form” relationship. It had no basis in theories about the behaviour of workers and firms. If workers and firms understood how the economy worked and thus could anticipate the effects of changes in policy, their behaviour would alter accordingly. Even in the short run, the curve would be mainly vertical.

All this left the Phillips curve in theoretical and empirical tatters. Thirty years on, however, both theory and fact have changed. The original Phillips curve, the observed trade-off between inflation and unemployment, has changed yet again. It is no longer steepening, as it was in the 1970s, but has been flattening. In the 1990s and early 2000s, as unemployment came down, inflation did not take off (chart 4, right-hand panel).

Why is the curve so much flatter? If you look at a Phillips curve for the 1990s and 2000s, all it really tells you is that inflation has become more or less constant. Because this has lasted for several years and because inflation depends ultimately on monetary policy, central banks can claim credit for this. They have won credibility, anchoring inflation expectations so that movements in actual inflation are damped. Because expectations are so central to inflation, communication has become an increasingly important part of monetary policy. Getting the message across depends as much on what central bankers say as on what they do (see [article](#)).

There is a theoretical argument to explain how expectations anchor inflation. A surprise increase in demand should lead firms to raise prices by less if they expect inflation to be low. That should translate into a flatter relationship between unemployment and inflation. Furthermore, some models predict that when inflation is low, firms reset prices less often. If central banks have managed to anchor inflation expectations at low levels, a bigger part of any expansion in demand should be transmitted into higher output and employment and less into inflation than in the 1970s. According to Charles Bean, the Bank of England's chief economist, the flattening Phillips curve is evidence of the power of monetary policy to keep a lid on inflation. If the public expects inflation to remain low and stable, central banks have a little more margin for error—so that even if policy is somewhat looser than it should be, inflation is less likely to take off. Columbia University's Michael Woodford puts it even more strongly. “Not only do expectations about policy matter,” he writes, “but, at least under current conditions, very little *else* matters.”

The flattening Phillips curve is not the only evidence of central banks' success in taming inflation. Inflation has also become much less persistent, in that a change in inflation dies away more quickly. According to Frederic Mishkin, a Fed governor, changes in American inflation in earlier decades were almost permanent, but since the late 1990s they have become relatively short-lived. Research in the euro area suggests that inflation has become less persistent there too, although it is more durable than in America.

James Stock, of Harvard University, and Mark Watson, of Princeton University, have divided American inflation into two bits: a permanent element in which changes are enduring; and a transitory element, consisting of fluctuations around the trend. They have found that in the late 1960s the variations in the permanent part started to become much more important than those in the transitory bit—in other words, inflation became more persistent. The permanent element peaked in the 1970s but has since declined markedly. Most of the variation in American inflation since then has been of the transitory sort (see chart 5).

What about Mr Greenspan's contention that central bankers have had a lot of help from globalisation? Economists have been conducting a lively debate about this. IMF staffers think globalisation has made a difference. As the share of trade in an economy rises, the prices of many goods made and bought there will be affected by demand and supply conditions abroad. Local firms will find it harder to raise prices when demand for their goods goes up because their customers can always buy from foreigners.

But other economists doubt that globalisation has counted for much. For example, Laurence Ball, of Johns Hopkins University, points out that in mainstream theory output affects inflation because it affects firms' marginal costs, and these are determined by their own output, not by foreigners'. All right, perhaps globalisation has reduced firms' average mark-ups—the gap between price and marginal cost. But so what? Even if average mark-ups have been reduced, increases in output should still raise both marginal costs and prices.

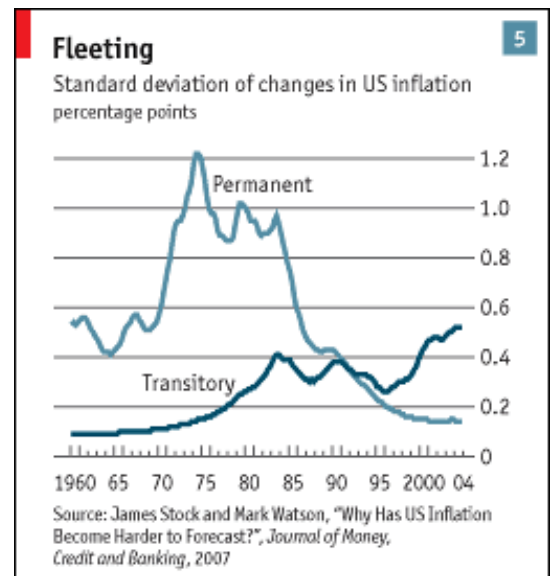
The outcome of this debate matters. Whether globalisation helps or hinders central banks, it does not remove their ultimate responsibility for keeping inflation low. Yet if globalisation is important, and is about to become an inflationary rather than a disinflationary force, central banks will find it harder to anchor expectations at low levels. If on the other hand central banks have overestimated the disinflationary effect of globalisation, they may have set interest rates lower than they should have done.

Furthermore, if this disinflationary effect is about to run out, then the flat Phillips curve contains a warning as well as a compliment for central banks. It may be evidence of the limits of downward pressure on inflation. A flatter Phillips curve implies a bigger "sacrifice ratio", the number of years that unemployment has to exceed its natural rate by one percentage point in order to reduce inflation by one point. Mr Mishkin reckons that this could have risen by 40%.

## A global conundrum

That means a lot of effort and pain would be needed to push inflation down further, as some hawks wish. To reduce it sustainably, central bankers would have to root out the modest inflation expectations that remain. In America, for instance, the public expects prices to rise by around 2% a year. These expectations are not only low, they also seem settled. Repegging them at an even lower rate would not be easy. "Such a shift could be difficult and time-consuming to bring about," argues Mr Mishkin.

Yet low inflation expectations cannot be taken for granted. Looser policy would set them adrift and steepen the Phillips curve once again, as in the 1970s. That would be a terrible reversal.



Expectations are not set in stone, and inflation is something that central bankers should beware of. The danger they now face is that in responding to this summer's markets squeeze they loosen policy too far and too fast, so that markets and the public believe that they care less about inflation than they did. Although central bankers everywhere need to be alert to this danger, it is greatest in America—because in America the central bank has form.

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