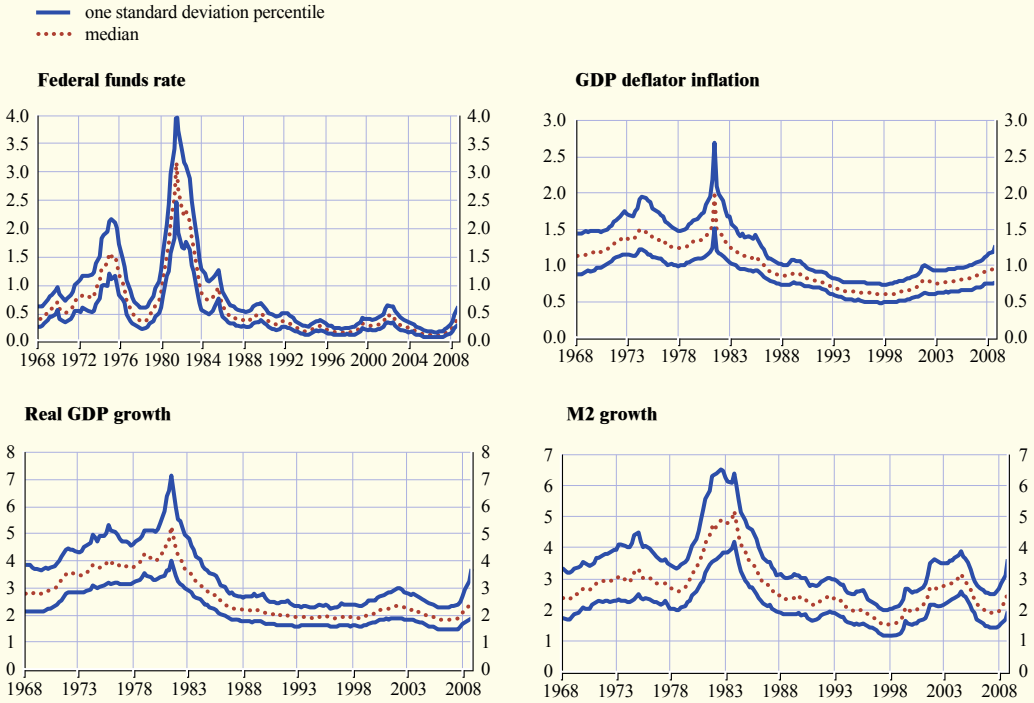
Box 1

MONETARY POLICY REGIMES AND MACROECONOMIC STABILITY

Empirical evidence clearly suggests that monetary policy regimes oriented towards the maintenance of price stability contribute to stable macroeconomic environments. By firmly anchoring inflation expectations, in particular, such regimes help to reduce both inflation volatility and macroeconomic uncertainty, thus improving the resilience of the economy to adverse shocks and supporting overall macroeconomic performance. The importance of stability-oriented regimes and their beneficial impact on macroeconomic performance is clearly demonstrated through a comparison of the macroeconomic performance of most advanced countries during the Great Inflation of the 1970s and that of recent years.

Chart A United States: volatility of shocks to key macroeconomic variables

(quarter on quarter, annualised; percentage points)



Source: L. Benati and C. Goodhart, "Monetary policy regimes and economic performance: the historical record, 1979-2008", in B. Friedman and M. Woodford (eds.), *Handbook of Monetary Economics*, Vol. 1D, North Holland, forthcoming.
Note: Based on a Bayesian vector autoregression with time-varying parameters.

The Great Inflation of the 1970s is a historically unique episode, illustrating how high inflation is associated with macroeconomic instability. Although history had already witnessed several episodes of high inflation, and even hyperinflation, they had always been a result of war, civil war or revolutions, and the resulting need on the part of governments to finance massive budget deficits via seigniorage.[1] By contrast, as stressed, for example, by Bradford DeLong with reference to the United States,[2] the Great Inflation is the only historical instance of a large, prolonged and persistent inflationary episode during peacetime. Besides its historical uniqueness, the Great Inflation was also characterised by several specific macroeconomic features.

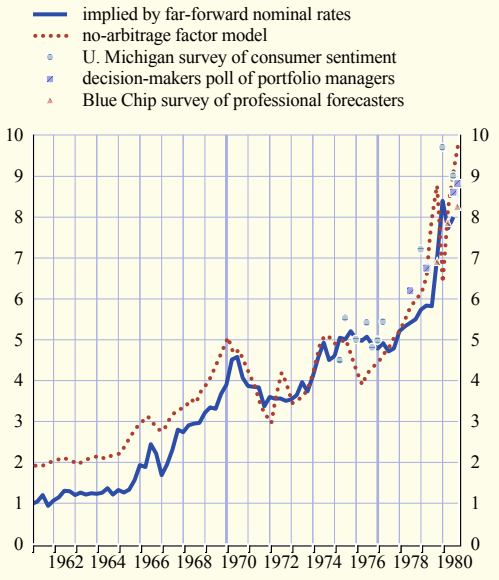
First, as illustrated in Chart A, there was a significant amount of macroeconomic volatility. Chart A shows the volatility of the shocks to four key US macroeconomic variables: the federal funds rate (which has traditionally been used by the Federal Reserve as the instrument of monetary policy), inflation, output growth and the rate of growth of the monetary aggregate M2. For all four measures, the volatility of shocks was comparatively high during the period of the Great Inflation, reaching a peak around the time of the disinflation of the early 1980s, then declining over subsequent years.

Second, as shown in Chart B, during the Great Inflation, long-term inflation expectations became less and less anchored. Chart B shows the progressive upward drift of long-term inflation expectations from the early 1960s, when expected inflation was around 1-2%, up to the early 1980s, when expectations were close to 10%.

A third feature of the Great Inflation was the comparatively large extent of inflation persistence, defined as the tendency of inflation to deviate from its long-term equilibrium – rather than quickly reverting to it – following a shock.[3] This automatically implies that, during those years, inflationary shocks caused comparatively large fluctuations in inflation around its equilibrium value when compared with both previous and subsequent years. The simplest explanation for the comparatively large extent of inflation persistence during those years reflects the above-mentioned progressive "de-anchoring" of inflation expectations.

Chart B United States: long-run inflation expectations

(percentage changes)



Source: A. Levin and J.B. Taylor, "Falling behind the curve: a positive analysis of stop-start monetary policies and the Great Inflation", in M.D. Bordo and A. Orphanides (eds.), *The Great Inflation*, University of Chicago Press, forthcoming.
Notes: The solid line depicts the forward rate of expected inflation six years ahead, using nominal forward rates computed by Gürkaynak, Sack and Wright (2006) and subtracting a constant far-forward real rate of 2% and a constant term premium of 1%. The dashed line depicts the five-year expected inflation rate from the no-arbitrage factor model of Ang, Bekaert and Wei (2008).

1 See, for example, R. Dornbusch and S. Fischer, "Stopping hyperinflations past and present", *Weltwirtschaftliches Archiv*, April 1986, and T.J. Sargent, "The ends of four big inflations", in R.E. Hall (ed.), *Inflation: Causes and Effects*, University of Chicago Press, 1983.
2 See J.B. DeLong, "America's peacetime inflation: the 1970s", in C. Romer and D. Romer (eds.), *Reducing Inflation: Motivation and Strategy*, University of Chicago Press, 1997.
3 For the United States, this has been documented, for example, by T.W. Cogley, G.E. Primiceri and T.J. Sargent, "Inflation-gap persistence in the U.S.", *American Economic Journal: Macroeconomics*, forthcoming. For the euro area, see the President's Address delivered by J.C. Trichet, President of the European Central Bank, at the conference "The ECB and its watchers IX", 7 September 2007.

With the monetary regime no longer providing a strong anchor or focal point for expectations, they inevitably came to depend, through a learning mechanism, on past inflation outcomes, thus automatically introducing a persistent, backward-looking component in inflation.

A conceptually related issue was the presence of a comparatively large fraction of inflationary shocks which were permanent in nature – that is, they moved inflation's long-term equilibrium level[4] – whereas, over subsequent years, the relevance of permanent shocks in explaining inflation's overall fluctuations has declined drastically.

The stabilisation of the early 1980s and the performance of stability-oriented monetary regimes

In most advanced countries, the early 1980s saw a marked shift towards a more aggressively counter-inflationary monetary policy stance, which resulted in significant declines in inflation. The disinflation was accompanied, for the vast majority of countries, by significant declines in the volatility of key macroeconomic aggregates and large decreases in macroeconomic uncertainty on all fronts. For the United States, for example, the first feature is clearly apparent from Chart A. Further, both the fraction of inflation fluctuations resulting from permanent shocks to inflation and inflation persistence has declined significantly. The decline of inflation persistence has been especially marked under inflation targeting regimes and monetary regimes oriented towards price stability, such as EMU. For example, it has been documented[5] that the inception of monetary union has led to a situation in which inflation persistence has been reduced dramatically, compared with the pre-EMU period. This means that after an inflationary shock, the return of inflation to levels consistent with the ECB's definition of price stability is much more rapid than before the adoption of the euro. Of course, this cannot be taken as a structural feature of the economy. It is conditional upon the ECB's determination to maintain price stability over the medium term and to ensure a solid anchoring of inflation expectations on an ongoing basis.

The stabilisation of the early 1980s was also accompanied by the progressive re-anchoring of inflation expectations. This is clearly illustrated by Chart C, which shows the evolution of CPI inflation

Chart C United States: CPI inflation expectations

(percentage changes)

Source: Livingston Survey.

4 See, in particular, J.H. Stock and M.W. Watson, "Why has US inflation become harder to forecast?", *Journal of Money, Credit and Banking*, 39(1), 2007, pp. 3-33.

5 See, for example, L. Benati, "Investigating inflation persistence across monetary regimes", *Quarterly Journal of Economics*, 123:3, 2008, pp. 1005-1060.

expectations[6] in the United States for three different time horizons, namely one, two and ten years ahead. Expectations for inflation two years ahead, which is the point at which monetary policy is traditionally thought to have its maximum impact, reached a peak of 9.3% in 1980, and then declined progressively to reach a low of about 2.1% in June 2009. Expectations for inflation ten years ahead were 4% in June 1991 (when figures thereon first became available) and decreased progressively until December 1998. Since then, they have been stable at 2.5%.

The anchoring of inflation expectations has become especially strong under regimes such as EMU. Ehrmann et al.[7], in particular, have documented how, under such regimes, long-term bond yields exhibit little reaction in response to macroeconomic data releases, which is a clear manifestation of the strength of the anchoring of inflation expectations. Inflation expectations have proven robust in the euro area even in the face of the large macroeconomic shocks associated with the financial crisis which started – in its most severe phase – in autumn 2008.[8]

6 Inflation expectations are taken from the "Livingston Survey", which is currently managed by the Federal Reserve Bank of Philadelphia. Data on expectations for inflation two and ten years ahead are only available starting from the mid-1970s and the early 1990s respectively.

7 M. Ehrmann, M. Fratzscher, R.S. Gürkaynak and E.T. Swanson, "Convergence and anchoring of yield curves in the euro area", ECB Working Paper Series No 817, October 2007.

8 See the lecture entitled "The crisis and its lessons", delivered by J.C. Trichet, President of the European Central Bank, at the University of Venice on 9 October 2009.