

THE “GREAT INFLATION”: LESSONS FOR MONETARY POLICY

This article discusses the key underlying causes of the “Great Inflation” of the 1970s and identifies its main lessons for monetary policy. Evidence points towards a crucial role played by policy mistakes in generating the Great Inflation. First, a comparison between the US experience and that of Germany¹ and Switzerland – which, during the 1970s, followed a “hard-money” monetary policy explicitly aimed at keeping inflation under control – casts serious doubt on the “bad luck” explanation of conventional wisdom, according to which the Great Inflation was simply the result of a series of large negative supply shocks. Second, the fact that the beginning of the Great Inflation in the United States, in the mid-1960s, pre-dates the large negative supply shocks of the early 1970s, poses a fundamental problem for explanations ascribing the inflationary outburst to such shocks. Third, a convincing case has been made that OPEC’s oil price increases of 1973 and 1979 could only have occurred under the conditions of global liquidity expansion associated with the collapse of Bretton Woods.

The Great Inflation therefore holds several important lessons for monetary policy-making. First, a strong and credible nominal anchor is essential to keep inflation expectations firmly pinned down. Indeed, a key reason for Germany’s success during the 1970s was that, following the collapse of Bretton Woods, it swiftly adopted a new nominal anchor in the form of monetary targeting. The stability of inflation expectations, however, should never be taken for granted, and requires continuous and careful monitoring by the monetary authority. The US experience of the second half of the 1960s, in particular, clearly shows that a few years of systematically disappointing inflation outcomes, in the absence of a clear definition of the monetary policy objective, can rapidly unanchor inflation expectations. A second important lesson concerns the dangers associated with an excessive reliance, for monetary policy purposes, on unobserved – and therefore intrinsically poorly measured – indicators, such as the output gap. In this respect, the German experience during the 1970s is especially interesting: Germany’s output gap mismeasurement problems were similar in magnitude to those of the United States in this period, but the very nature of the monetary policy strategy adopted by the Deutsche Bundesbank was such as to minimise their impact on monetary policy. Finally, the experience of the Great Inflation decisively refuted the notion of an exploitable trade-off between inflation and economic activity, which was part of the conventional wisdom in macroeconomics during the 1960s.

I INTRODUCTION

Together with the Great Depression, the Great Inflation was one of the most serious monetary policy failures of the twentieth century. With a few notable exceptions (first and foremost, Germany and Switzerland), annual inflation rates during the 1970s reached levels of over 10% across the OECD. Chart 1 shows annual CPI inflation rates for the euro area’s four largest countries for the period January 1958-December 2009. Whereas German inflation peaked at 7.8%, the peaks for France, Italy, and Spain were 15.2%, 25.2% and 28.5% respectively. A quarter of a century after it ended with the disinflation of the early 1980s, the Great Inflation is still one of the most intensively investigated episodes in economic history,² and the impact

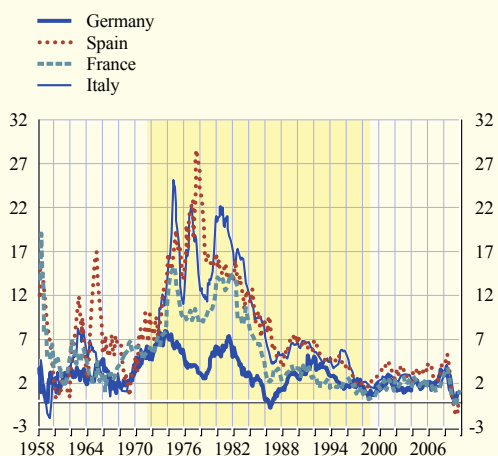
of its lessons on policy-making cannot be overstated.

This article discusses the key underlying causes of the Great Inflation of the 1970s and identifies its main lessons for monetary policy. Overall, evidence points towards a critical role played by policy mistakes in generating the Great Inflation. First, a comparison between the US experience and that of Germany and Switzerland – which, during the 1970s, followed a “hard-money” monetary policy explicitly aimed at keeping inflation under control – casts serious doubt

- 1 “Germany” is used throughout this article to refer to the Federal Republic of Germany.
- 2 See for example Bordo, M. and Orphanides, A. (eds.), *The Great Inflation*, The University of Chicago Press for the National Bureau of Economic Research, forthcoming.

Chart 1 CPI inflation rates in selected euro area countries

(annual percentage changes)



Sources: Bundesbank and the IMF's *International Financial Statistics*.

Note: The shaded area represents the period between the collapse of Bretton Woods and the start of Stage Three of Economic and Monetary Union.

on the “bad luck” explanation of conventional wisdom, according to which the Great Inflation was simply the result of a series of large negative supply shocks. Second, the fact that the beginning of the Great Inflation in the United States, in the mid-1960s, pre-dates the large negative supply shocks of the 1970s constitutes a fundamental problem for explanations ascribing the inflationary outburst to such shocks. Third, a convincing case has been made that OPEC’s oil price increases of 1973 and 1979 could only have occurred under the conditions of global liquidity expansion associated with the collapse of Bretton Woods.

The Great Inflation episode holds several important lessons for monetary policy-making. In particular, it clearly highlights the vital role played by a credible nominal anchor in firmly pinning down inflation expectations, and the dangers associated with an excessive reliance, for monetary policy purposes, on unobserved – and therefore intrinsically poorly measured – indicators, such as the output gap. Finally, the Great Inflation decisively refuted the notion of an exploitable trade-off between inflation and economic activity relative to some “natural”

level, which was part of the conventional wisdom in macroeconomics in the 1960s.

2 CAUSES OF THE GREAT INFLATION

The Great Inflation of the 1970s is a historically unique episode. Although episodes of high inflation, and even hyperinflation, had occurred previously, they had always been associated with wars, civil wars or revolutions, and with the resulting need, on the part of governments, to finance massive budget deficits through seigniorage (in other words, by printing money).³ In contrast, as stressed, for example, by Bradford De Long with reference to the United States,⁴ the Great Inflation is the only historical instance of a major, prolonged and persistent inflationary episode during peacetime. As emphasised by Robert Barro⁵ in his historical excursus of the evolution of US monetary regimes since the Civil War (1861-1865), the Great Inflation coincided with the complete severance of any link between money and a commodity base, such as gold or silver, which had for centuries provided a strong nominal anchor and thus stabilised inflation expectations: “In earlier periods before roughly 1965, the monetary regime guaranteed some long-run stability in monetary growth, and therefore in long-term inflation, which in turn restricted the effects of shifting inflationary expectations [...]. Although there were earlier periods when the United States did not adhere to a gold or silver standard, these episodes typically occurred in times of war and could reasonably be perceived as temporary. The period since 1971 seems to be the first time that we have completely severed, both currently and prospectively, the link between our money and a commodity base. [...] If the above

3 See, first and foremost, Dornbusch, R. and Fischer S., “Stopping Hyperinflation, Past and Present”, *Weltwirtschaftliches Archiv*, April 1986.

4 See De Long, B.J., “America’s Peacetime Inflation: the 1970s”, in Romer, C. and Romer, D. (eds.), *Reducing Inflation: Motivation and Strategy*, The University of Chicago Press 1997.

5 See Barro, R.J., “United States Inflation and the Choice of a Monetary Standard”, in Hall, R.E. (ed.), *Inflation: Causes and Effects*, University of Chicago Press 1982.

scenario is correct, the inflation problem must be analysed in terms of changes to the basic monetary structure.”

In this passage, Barro points to a fundamental lesson of the Great Inflation episode, i.e. the need to design monetary institutions in such a way as to provide a strong anchor for inflation expectations. As will be discussed below, both Germany’s success during the 1970s and advanced countries’ ability to keep inflation low and stable following the disinflation of the early 1980s have crucially hinged on the existence of such an anchor. Furthermore, the design of monetary frameworks such as Economic and Monetary Union and inflation-targeting regimes precisely reflects this key lesson of the Great Inflation.

KEY MACROECONOMIC FACTS FOR THE UNITED STATES AND GERMANY

Charts 2 and 3 show, for the period between January 1965 and December 1984, for the United States and Germany respectively, annual CPI inflation, nominal interest rates, ex post real interest rates (which provide a simple and model-independent measure of the monetary policy stance), the annual rates of change of the food and energy components of the CPI, real GDP growth and the nominal effective exchange rate (NEER).⁶

The upper left-hand panel of Chart 2 highlights a key stylised fact of the Great Inflation in the United States: starting in early 1965, inflation increased from slightly above 1% to a peak of 6.4% in February 1970. After temporarily decreasing to a trough of 2.9% in August 1972 it accelerated again, and in October 1973 (the date of the first oil price shock) it was running at 8.1%. This clearly suggests that the US economy was already on a path of instability well before it was hit by the oil price shocks.

As discussed by Levin and Taylor,⁷ this upward drift in inflation was accompanied by a progressive unanchoring of inflation expectations not only at short, but also at long horizons. Specifically, after remaining very stable until about 1965, US

long-term inflation expectations started to drift progressively upwards during the second half of the 1960s, exhibited a temporary decrease in the first half of the 1970s, and then moved decisively towards 10% during the second half of the 1970s, when inflation itself was dramatically accelerating towards its peak of 14.6%, which was reached in March 1980. The take-off in inflation expectations in the second half of the 1960s was reflected in nominal wage growth. The annual rate of growth of compensation per hour in the non-farm business sector, for example, increased from 3.6% in 1965 Q1 to a peak of 8.4% in 1968 Q4. During subsequent years it further accelerated, reaching peaks of 11.3% in both 1975 Q1 and 1980 Q4.

Speeches and statements to the US Congress by Chairmen of the Federal Reserve System during the second half of the 1960s and the early 1970s confirm the existence of widespread fears that the United States was at risk of entering a dangerous inflationary spiral. In his statement to the Joint Economic Committee (JEC) of the US Congress in March 1969, for example, Federal Reserve Chairman Martin remarked that “since mid 1965, except for a brief respite in early 1967, we have had an overheated economy, and growing expectations of inflation. [...] It is clear that inflation, and the widespread expectation of it, is our most serious current economic problem.”⁸

And in May 1970, just a few weeks after becoming Chairman of the Federal Reserve System, Arthur Burns remarked to the American Bankers Association: “We are living now in an inflationary climate. [...] In these circumstances, it should not be surprising that many

6 Ex post real interest rates have been computed as the difference between nominal rates and CPI inflation. For the sake of readability, the chart includes a filtered version of the series, from which high frequency components have been removed. Filtering has been performed using the band-pass filter proposed in Christiano, L.J. and Fitzgerald T., “The Band-Pass Filter”, *International Economic Review*, 44 (2), 435-465, 2003.

7 See Levin, A. and Taylor, J., “Falling Behind the Curve: A Positive Analysis of Stop-Start Monetary Policies and the Great Inflation”, in Bordo and Orphanides, *op cit.*

8 See McChesney Martin, W., Jr., *Statement Before the Joint Economic Committee*, March 25, 1969.

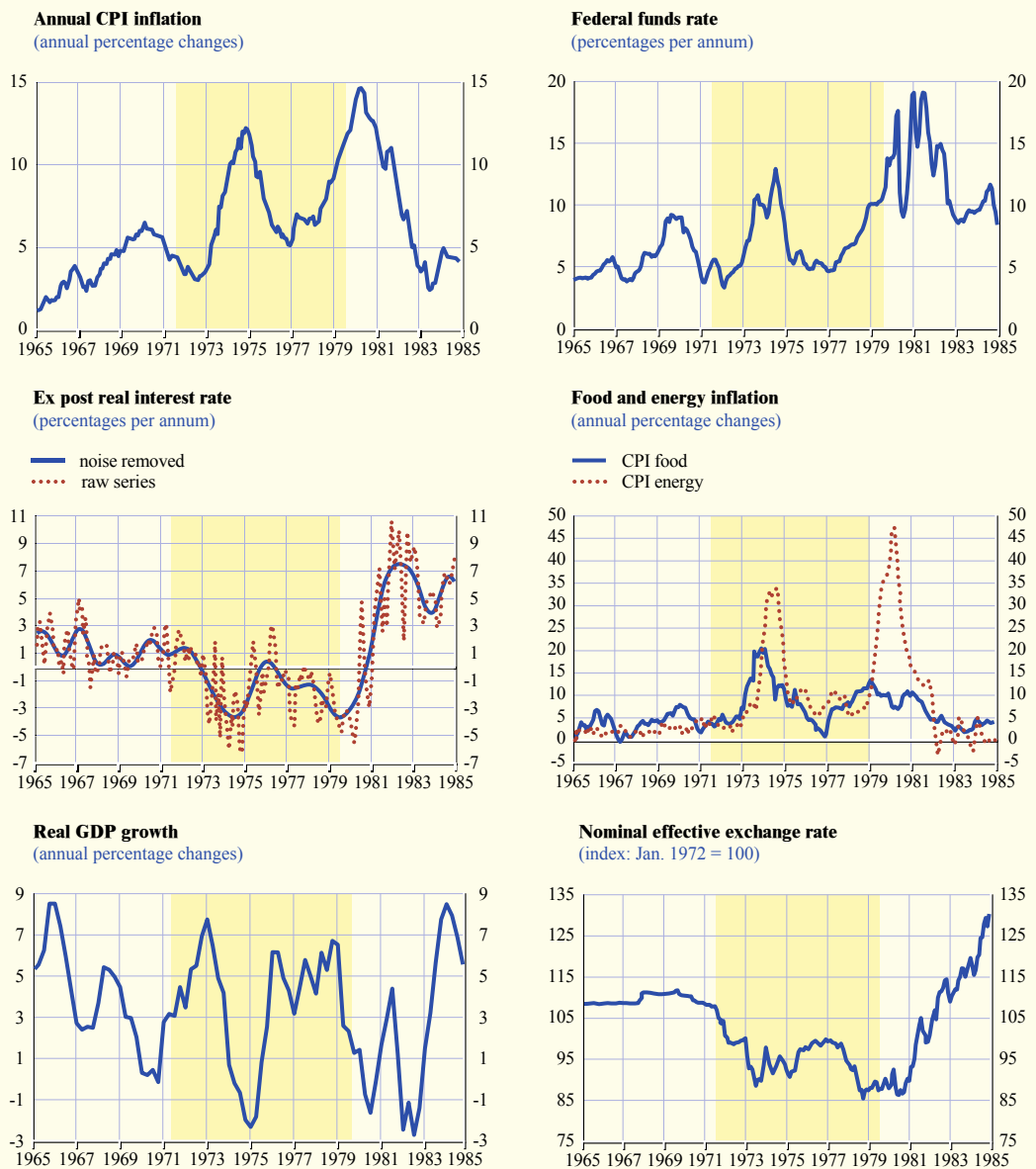
businessmen and consumers believe that inflation is inevitable.”⁹

inflationary upsurge of the second half of the 1960s was comparatively minor, with the

What was the origin of such inflationary pressures? The evidence from the middle right-hand panel of Chart 2 suggests that the contribution of energy prices to the

9 See Burns, A.F., *Inflation: The Fundamental Challenge to Stabilisation Policies*, remarks by Arthur F. Burns, Chairman of the Board of Governors of the Federal Reserve System, before the 17th Annual Monetary Conference of the American Bankers Association, Hot Springs, Virginia, May 18, 1970.

Chart 2 Selected macroeconomic data for the United States



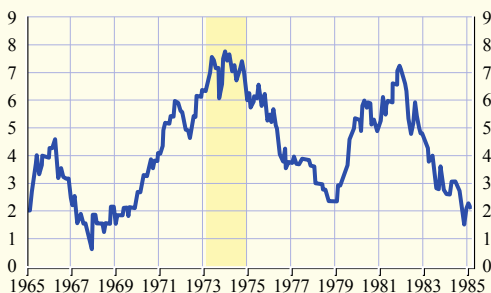
Sources: Federal Reserve System, the IMF's *International Financial Statistics* and ECB calculations.
Note: The shaded area represents the period between the collapse of Bretton Woods and the beginning of Paul Volcker's chairmanship of the Federal Reserve System.

annual rate of change of the energy component of the CPI oscillating between 0.0% and 3.7%, and exhibiting very little variation. Food prices, on the other hand, appear to have contributed to a non-negligible extent to inflation’s escalation. First, the 1965-66 inflation hump (when overall CPI inflation

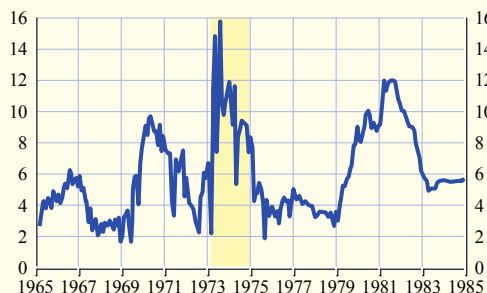
increased from 1.3% in January 1965 to a peak of 3.8% in September 1966) was preceded by a similar hump in food inflation, which reached a peak of 6.6% in March 1966. Second, the subsequent hump in CPI inflation was accompanied by a rapid acceleration in food inflation, which increased from

Chart 3 Selected macroeconomic data for Germany

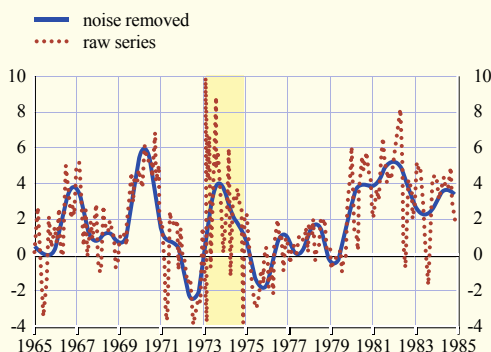
Annual CPI inflation
(annual percentage changes)



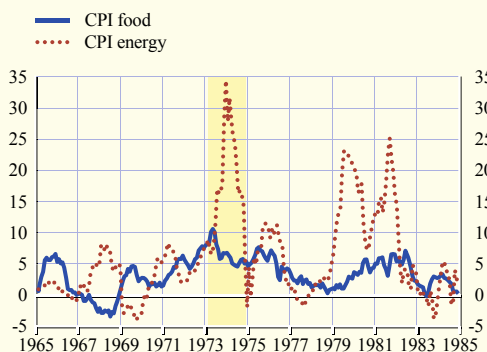
Nominal interest rate
(percentages per annum)



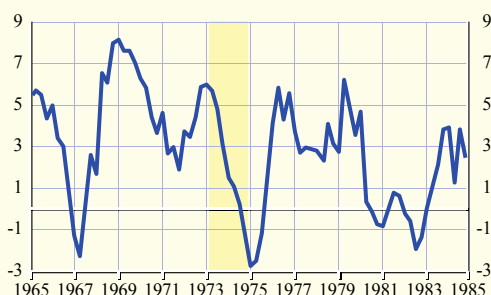
Ex post real interest rate
(percentages per annum)



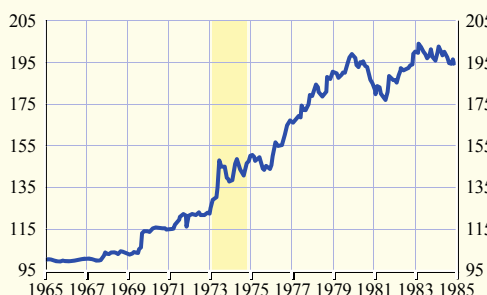
Food and energy inflation
(annual percentage changes)



Real GDP growth
(annual percentage changes)



Nominal effective exchange rate
(index: Jan. 1965 = 100)



Sources: Bundesbank, BIS, the IMF’s *International Financial Statistics* and ECB calculations.

Note: The shaded area represents the period between the abandonment by Germany of its dollar peg and the announcement by the Bundesbank of its first monetary target.

-0.3% in April 1967 to a peak of 7.8% in February 1970. Thereafter food prices continued to exert strong inflationary pressures on the US economy (especially in 1974, when food price inflation reached a peak of more than 20%), but their impact was dwarfed by that of energy, with the impact of the 1973 and 1979 oil price shocks being clearly visible in the data.

Fiscal policy's contribution to igniting the Great Inflation in the United States should not be understated either. In the second half of the 1960s President Johnson's determination to proceed with both the Vietnam war and the "Great Society" spending programmes, without a corresponding increase in taxation, contributed to increasing inflationary pressures across the board.¹⁰ The figures for the cyclically adjusted budget deficit net of interest payments published by the Congressional Budget Office (a simple measure of the fiscal stimulus imparted to the economy), having oscillated between 0.1% and 0.3% of potential GDP between 1962 and 1965, rapidly increased to 1.6% in 1966 and peaked at 3.7% in 1968, before decreasing during subsequent years. During the 1970s it oscillated between 0.4% and 1.8% of potential output. Accordingly, the fiscal policy stance appears to have been stimulative overall, throughout the Great Inflation episode.

In the case of Germany, the pattern of inflationary pressures during the second half of the 1960s appears to have been roughly the opposite of that in the United States, with stronger pressures stemming from energy, and comparatively milder ones originating from food (indeed there were even several months in which the food component of the CPI decreased). A fundamental difference between the United States and Germany during the Great Inflation episode is that, whereas Germany's NEER appreciated strongly during most of the decade, the United States' NEER depreciated significantly, with the result that, towards the end of the 1970s Germany's NEER was almost twice as high as it had been in January 1965, whereas the United States' NEER was about 20% lower. The important role played by the appreciation of

the NEER in (partially) protecting the German economy from inflationary pressures originating on world commodity markets is clearly revealed by a comparison of the increases in the "electricity, gas, and fuel" component of the German CPI around the time of the first and of the second oil price shocks. After the dollar peg was abandoned in March 1973, Germany's NEER appreciated swiftly, but then fluctuated comparatively little until 1976, which saw the beginning of a period of rapid appreciation that lasted until the end of 1979. The relative stability of the German NEER around the time of the first oil price shock, and its rapid appreciation around the time of the second explain why, even though CPI energy inflation was higher in the United States in the latter episode than in the former, for Germany the opposite was the case. The contrasting behaviour of the German and US NEERs during the Great Inflation episode illustrates the important role played by a strong exchange rate in shielding the domestic production cost structure from negative supply shocks originating on world markets: between the collapse of Bretton Woods and December 1979, the food and energy components of the US CPI increased by 104% and 187% respectively, whereas the food and the electricity, gas and fuel components of the German CPI increased by 42% and 108% respectively. The key role played by the exchange rate naturally shifts the focus of attention to differences between the monetary policy strategies followed by the respective central banks during the Great Inflation.

As the middle left-hand panel of Chart 2 shows, the ex post real interest rate in the United States was positive, although comparatively quite low, during most of the period between January 1965 and the collapse of Bretton Woods in August 1971. It then turned negative and

¹⁰ The notion that the take-off of US inflation in the second half of the 1960s was partly due to the excessive pressure on resources created by the "Great Society" spending programmes is most notably associated with Federal Reserve Chairman Arthur Burns. See in particular several of the speeches collected in Burns, A.F., *Reflections of an Economic Policy Maker: Speeches and Congressional Statements, 1969-1978*, Washington: American Enterprise Institute, AEI Studies No 217, 1978.

remained so for the entire period between August 1971 and the beginning of the disinflation in October 1979. The fact that the US monetary policy stance was so loose as to systematically produce negative real interest rates throughout the Great Inflation episode gives rise to two considerations. First, it provides an explanation for the depreciation of the US NEER referred to above following the collapse of Bretton Woods: as Chart 2 shows, indeed, the US NEER is very strongly correlated with the evolution of the ex post real interest rate throughout the period under consideration, with the NEER appreciating decisively only following the interest rates hikes associated with the Volcker disinflation. Second, as stressed by Clarida, Gali, and Gertler¹¹ in their influential analysis of the Great Inflation in the United States, the looseness of US monetary policy during the 1970s strongly suggests that – in spite of the obvious inflationary impact of food, and especially oil price shocks during that decade – an excessively accommodative monetary policy might have played a crucial role in allowing US inflation to take off and endure. Clarida et al., in particular, first documented a fundamental weakness of US monetary policy during the period preceding the appointment of Paul Volcker as Chairman of the Federal Reserve System, namely its failure to satisfy the so-called “Taylor principle” (named after the American macroeconomist John Taylor),¹² which states that nominal interest rates should move more than one-for-one with (expected) inflation.¹³ The finding that, before Volcker’s appointment, US monetary policy had not been fighting inflation with sufficient vigour has subsequently been confirmed by several significantly more sophisticated analyses,¹⁴ and represents one of the key elements in interpreting and explaining the Great Inflation in the United States.

Turning to Germany, during the period leading up to the collapse of Bretton Woods, ex post real interest rates were systematically higher in that country than in the United States, highlighting the firmer stance adopted by the Bundesbank during those years. Following the first oil price shock the Bundesbank tried to avoid second

round effects through “moral suasion”, but with little success. The social partners essentially ignored the signals coming from the central bank and agreed to significant increases in nominal wages, which caused increases in both inflation and unemployment.¹⁵ As Chart 3 makes clear, however, Germany’s mid-1970s inflation spike, at 7.8%, was significantly lower than the corresponding US one of 12.2%. Over subsequent years the Bundesbank fully exploited the freedom of action it had gained when it was relieved of its obligation to defend the parity with the dollar, in March 1973, by pursuing a counter-inflationary policy that was appropriate for the conditions it was facing domestically.¹⁶ This allowed it to bring inflation down to 2.1% in September 1978, and to limit the subsequent inflationary peak, which followed the second oil price shock, to 7.5%, in October 1981. In this respect, the successful management of the impact of the second oil price shock crucially hinged on the lessons learned from the failure of “moral suasion” to rein in second-round effects following the 1973 shock.¹⁷ Mindful of that experience, the Bundesbank adopted a significantly tougher policy stance, which was reflected in the (filtered) ex post real interest rate, which peaked at about 6% in 1982. In line with the above discussion of the evolution of the US NEER during the 1970s, the firmer monetary policy stance adopted by the Bundesbank during those years provides

11 See Clarida, R., Gali, J. and Gertler, M., “Monetary Policy Rules and Macroeconomic Stability: Evidence and Some Theory”, *Quarterly Journal of Economics*, CXV(1), 2000, pp.147-180.

12 See Taylor, J.B., “Discretion Versus Policy Rules in Practice”, *Carnegie-Rochester Conference Series on Public Policy*, 39, 1993, pp.195-214.

13 The rationale behind the “Taylor principle” is that, in order to stabilise inflation, any (expected) inflationary upsurge should be countered by an increase in the (expected) real rate of interest.

14 See in particular Lubik, T. and Schorfheide, F., “Testing for Indeterminacy: An Application to U.S. Monetary Policy”, *American Economic Review*, 94(1), 2004, pp.190-217.

15 See the discussion in Issing, O. “Why Did the Great Inflation Not Happen in Germany?”, *Federal Reserve Bank of St. Louis Review*, March/April 2005, 87(2, Part 2), pp.329-35.

16 In fact, Germany had not been pegging to the dollar since the beginning of Bretton Woods at the same exchange rate. Specifically, the Deutsche Mark was revalued in 1961 and again in 1969, when it was allowed to float for six months and then re-pegged at a higher exchange rate.

17 This point is emphasised by Issing, op cit., 2005.

an explanation for the strong appreciation of Germany's NEER shown in Chart 3.

A key element of the Bundesbank's monetary policy strategy was the announcement, starting from December 1974, of targets for the annual rate of growth of the money supply. There were two rationales for this.¹⁸ First, there was the intention of restraining inflation by controlling the rate of growth of monetary aggregates. Second, the announcement of quantitative monetary targets was considered to be a means of directly steering agents' inflationary expectations. Whereas the first rationale was specific to the monetary policy strategy adopted by the Bundesbank from 1974, the need to provide a strong nominal anchor to serve as a "focal point" for agents' inflation expectations is both a general principle of monetary policy and one of the most enduring lessons of the Great Inflation. Indeed, a key reason why Germany largely avoided the Great Inflation is that, following the collapse of the nominal anchor provided by the Bretton Woods regime, it swiftly provided agents with another anchor, in the guise of monetary targets. Most other countries, by contrast, "limped through" the 1970s without any clear anchor, with the result that inflation kept accelerating.

The objective of containing inflation by controlling the rate of growth of the money supply reflected the Bundesbank's explicit recognition that inflation is ultimately a monetary phenomenon. Such recognition was, however, far from universal during the 1970s. In their extensive analysis of the broad intellectual climate surrounding monetary policy-making in the United Kingdom during the 1960s and 1970s, for example, Nelson and Nikolov¹⁹ point out that "monetary policy was not seen as essential for inflation control; the latter, instead, was largely delegated to incomes policy (wage and price controls). [...] Essentially, UK policymakers viewed monetary policy as disconnected from inflation for two reasons. First, inflation was perceived as largely driven by factors other than the output gap; secondly, policymakers were highly sceptical about the ability of monetary

policy to affect aggregate demand or the output gap appreciably."

As stressed by Nelson and Nikolov, this led to both a loose monetary policy and attempts to control inflation by non-monetary means, and contributed decisively to the UK's inflationary outburst of the 1970s. Only when, in 1979, monetary policy began to be based on an explicit recognition of the monetary nature of the inflationary process, could the Great Inflation in the United Kingdom be brought to an end.

Although this section focuses on a comparison between the macroeconomic performances of Germany and the United States, it is worth stressing that the Swiss experience during the 1970s was similar to Germany's, both in terms of monetary policy strategy – which placed great importance on the rates of growth of monetary aggregates – and in terms of overall inflationary performance. The main difference was that, following the first oil price shock, Swiss inflation peaked at 11.9%, a significantly higher rate than in Germany and close to the peak in the United States. Subsequently, however, precisely as in Germany, the tough counter-inflationary stance adopted by the Swiss National Bank led to a sharp deceleration of inflation, which remained below 2% between mid-1976 and early 1979. Following the second oil price shock, inflation peaked at 7.5% in the second half of 1981, before falling over subsequent years.

Productivity developments provide a further, important perspective on the differing macroeconomic performances of the United States and Germany during the 1970s. A crucial shortcoming of US monetary policy during those years was its inability to detect the 1970s productivity slowdown in real time, which resulted in a systematic over-estimation

¹⁸ See, again, Issing, *op cit.*, 2005.

¹⁹ See Nelson, E. and Nikolov, K., "Monetary Policy and Stagflation in the UK", *Journal of Money, Credit and Banking*, 36(3), 2004, pp. 293-318, and also Batini, N. and Nelson, E., "The U.K.'s Rocky Road to Stability", *Working Paper Series*, No 2005-020A, Federal Reserve Bank of St. Louis, 2005.

of the actual extent of slack existing in the economy.²⁰ Given the extensive reliance of US policy-makers on output gap measures as indicators of future inflationary pressures, such over-estimation automatically translated into the excessively loose monetary policy discussed above.

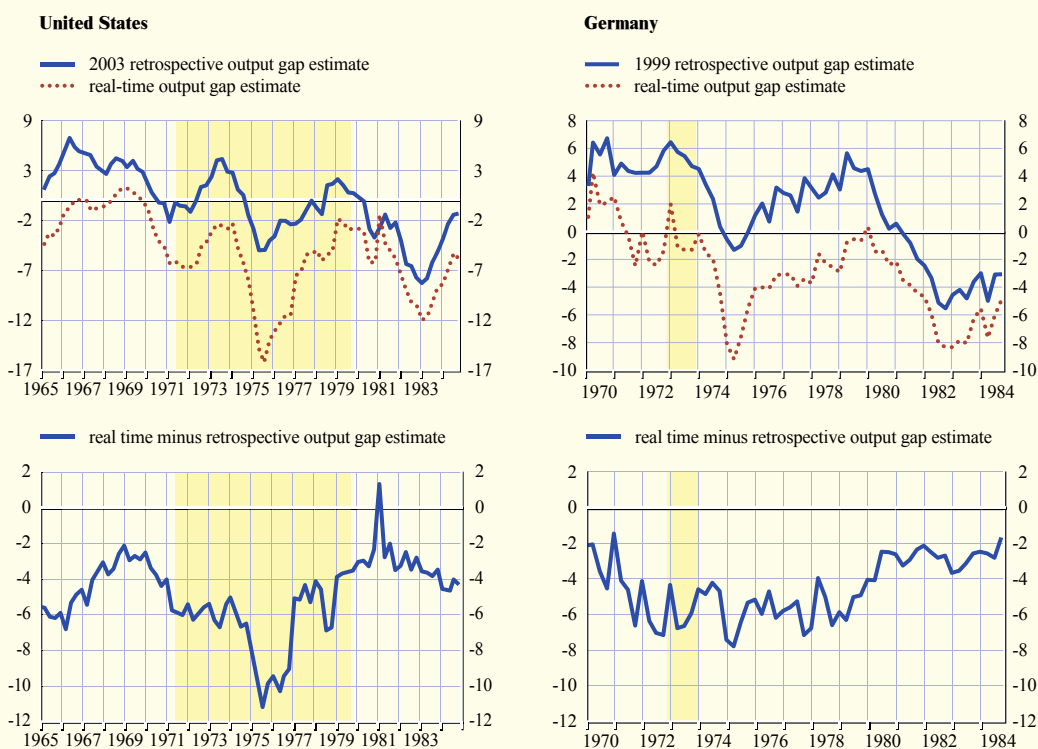
A comparison with Germany, in this respect, is intriguing. The upper panels of Chart 4 show real-time and retrospective estimates of the US and German output gaps between January 1965 and December 1984, and the lower panels the extent of real-time output gap mismeasurement, which is defined as the difference between the series in the upper panels.²¹ As the chart clearly shows, with the single exception of 1975-76 (when US output gap mismeasurement dramatically worsened to an average of

around 10 percentage points), the extent of mismeasurement in these two countries was quite similar during the entire Great Inflation episode. However, the two countries’ inflationary performances were markedly different, with CPI annual inflation peaking at 7.8% in Germany and 14.6% in the United States. What can account for this difference?

- 20 See in particular Orphanides, A., “Monetary Policy Rules and the Great Inflation”, *American Economic Review, Papers and Proceedings*, 92(2), 2002, pp. 115-120, Orphanides, A., “The Quest for Prosperity Without Inflation”, *Journal of Monetary Economics*, 50, 2003, pp. 633-663, and Orphanides, A., “Historical Monetary Policy Analysis and the Taylor rule”, *Journal of Monetary Economics*, 50, 2003, pp. 983-1022.
- 21 The data shown in Chart 4 are the original data used in Orphanides, A., “Historical Monetary Policy Analysis and the Taylor Rule”, op. cit. and in Beyer, A., Gaspar, V., Gerberding, C. and Issing, O., “Opting out of the Great Inflation: German monetary policy after the break down of Bretton Woods”, *Working Paper Series No 1020*, ECB, March 2009. The data have been kindly provided by Orphanides and Beyer.

Chart 4 Output gap mismeasurement in the United States and Germany

(percentages of GDP)



Sources: Orphanides, A., “Historical Monetary Policy Analysis and the Taylor Rule”, op. cit. and Gerberding, C., Seitz, F. and Worms, A., “How the Bundesbank really conducted monetary policy”, *North American Journal of Economics and Finance*, 16(3), 2005, pp. 277-292.
Note: The shaded areas in the left-hand panels represent the period between the collapse of Bretton Woods and the beginning of Paul Volcker’s chairmanship of the Federal Reserve System, while those in the right-hand panels represent the period between the abandonment by Germany of its dollar peg and the announcement by the Bundesbank of its first monetary target.

As extensively discussed by Beyer, Gaspar, Gerberding and Issing,²² a key reason for Germany's superior inflation performance during the 1970s has to do with the very nature of the monetary targeting strategy adopted by the Bundesbank from 1974. A crucial feature of a money growth targeting rule, indeed, is that under such a rule the nominal interest rate reacts to estimates of the change in the output gap, rather than to estimates of the output gap itself. Although this might appear, at first sight, to be a minor difference, it is not: the extent of mismeasurement of real-time estimates of the change in the output gap is significantly smaller than the extent of output gap mismeasurement.²³ This provides a straightforward explanation for why a comparable degree of output gap mismeasurement in these two countries was accompanied by vastly different macroeconomic performances.

The fact that, under its monetary targeting strategy, the Bundesbank disregarded the output gap when setting interest rates is also supported by the empirical evidence of Beyer et al. Specifically, their results show that whereas German interest rates reacted to the perceived output gap during the period before monetary targeting (i.e. before 1974), such reaction essentially ceased to exist under monetary targeting.

SUMMING UP: BAD POLICY OR BAD LUCK?

The traditional, "popular" explanation for the Great Inflation, which ascribes it predominantly to the oil price shocks of 1973 and 1979, was originally associated with the work of Alan Blinder,²⁴ and of Michael Bruno and Jeffrey Sachs.²⁵ In a nutshell, the essence of this position is that, as stated by Blinder, "the 1970s really were different. Energy shocks are quite clearly a product of the brave, new post-OPEC world."²⁶

There are three main reasons, however, why explanations of the Great Inflation ascribing it to misguided monetary policies appear to be significantly more plausible than those attributing it to an adverse sequence of exogenous shocks.

First, a fact that is often overlooked in discussions about the Great Inflation (which usually focus on the US experience alone) is that neither Germany nor Switzerland experienced it (or at least not to the same extent as elsewhere). This fact is difficult to square with the "bad luck" explanation. A fundamental reason why stability-oriented central banks were able to spare their economies from the Great Inflation was a "stability culture". According to this view, the ultimate reason for the diverging macroeconomic performances of the United States and Germany around the time of the Great Inflation lies in a fundamentally different attitude towards inflation on the part of their respective societies.

Second, as previously pointed out, the Great Inflation in the United States started around 1965, well before the food and oil price shocks of the 1970s. This fact is fundamentally at odds with the logic of "bad luck" explanations.

Third, a convincing case has been made that OPEC's dramatic oil price increases of 1973 and 1979 could only have occurred under the conditions of expansion in global liquidity associated with the collapse of Bretton Woods. This position – associated, around the time of the Great Inflation, with Milton Friedman, Phillip Cagan, and Ronald McKinnon²⁷ – has recently been revived by Barsky and Kilian,²⁸ who argue that a significant portion of the

22 See Beyer et al., op cit.

23 See Orphanides, A., "The Quest for Prosperity Without Inflation", op. cit.

24 See in particular Blinder, A., "The Anatomy of Double Digit Inflation in the 1970s", in Hall, R.E. (ed.), *Inflation: Causes and Effects*, University of Chicago Press for NBER, 1982, pp. 261-282.

25 See Bruno, M. and Sachs, J., *Economics of Worldwide Stagflation*, Harvard University Press, 1985.

26 See Blinder (1982, op cit.).

27 See Friedman, M., "Perspective on Inflation", *Newsweek*, June 24 1974, Cagan, P., *Persistent Inflation: Historical and Policy Essays*, New York: Columbia University Press, 1979, and McKinnon, R. I., "Currency Substitution and Instability in the World Dollar Standard", *American Economic Review*, 72(3), 1982, pp. 320-333.

28 Barsky, R. B., and Kilian L., "Do We Really Know That Oil Caused the Great Stagflation? A Monetary Alternative", in *NBER Macroeconomics Annuals 2001*, 16, 2001, pp. 137-183, Cambridge, Mass., The MIT Press.

commodity price rises of the 1970s should be characterised as the endogenous market response to the global monetary forces unleashed by the collapse of Bretton Woods. Under this interpretation, the collapse of Bretton Woods should not be regarded as simply being chronologically coincidental with the Great Inflation, but should rather be seen as playing a fundamental causal role, first in destroying a nominal anchor for inflation expectations, and then in unleashing an upsurge in global liquidity.

3 LESSONS FROM THE GREAT INFLATION

The Great Inflation holds several important lessons for monetary policy-making. First, it highlights the crucial role played by a strong and credible nominal anchor in firmly pinning down inflation expectations. A key reason for Germany’s success during the 1970s was that, following the collapse of Bretton Woods, it swiftly adopted a new nominal anchor in the form of monetary targeting. This allowed Germany to avoid the fate of countries, such as the United States, in which inflationary expectations during the 1970s became progressively unanchored at all horizons.

An equally important lesson is that the stability of inflation expectations should never be taken for granted. The US experience of the second half of the 1960s is, in this respect, especially illuminating and sobering: with inflation steadily increasing, from slightly above 1% at the beginning of 1965, to more than 5% in the early 1970s, inflation expectations, which had remained remarkably stable until the mid-1960s, started to drift progressively upwards, in reaction to actual inflation outcomes. This clearly shows that just a few years of systematically disappointing inflation outcomes can rapidly unanchor inflation expectations.

This automatically leads to a further key lesson, namely the importance of the reputation and credibility of the central bank which, according to Alan Blinder’s well-known definition,²⁹

simply depends on “matching words with deeds”, i.e. validating policy announcements with actual outcomes. In fact, policy-makers of the 1960s and 1970s were perfectly aware of the crucial importance, for the purpose of keeping inflation expectations firmly anchored, of maintaining a strong anti-inflationary reputation, and that the only way to achieve that was to actually deliver low and stable inflation. In his February 1965 testimony to the JEC, for example, Federal Reserve Chairman Martin warned about the dangers associated with an upward drift in inflation, and with the resulting, likely loss of credibility and dislocation of inflation expectations, warning that failure to prevent an upward drift in inflation might set off an inflationary spiral.³⁰ His words proved prescient, to the point that only four years later, in the same venue, he concluded that “public skepticism about the Government’s ability to “do something” about prices has its roots in this history of ever-quickenning inflation.”³¹

In this respect, the experience of the Great Inflation did not reveal to central bankers any new, fundamental and previously unknown principles of monetary policy-making, but rather burnished into their consciousness, by means of a dramatic example, the dangers associated with allowing an inflationary spiral to develop.

The Great Inflation also illustrated the dangers associated with an excessive reliance, for monetary policy purposes, on unobserved – and therefore intrinsically poorly measured – indicators such as the output gap. This lesson is especially relevant at the current conjuncture, as the economic contraction associated with the financial crisis has generated a significant degree of uncertainty concerning current potential output levels – and therefore output gaps – in several countries. In this respect, the German experience during the 1970s is, once again, especially interesting, as it clearly

29 See Blinder, A., *Central Banking in Theory and Practice*, MIT Press, 1998.

30 See McChesney Martin, W., Jr., *Statement Before the Joint Economic Committee*, February 26, 1965.

31 McChesney Martin (1969, op cit.).

shows that the deleterious macroeconomic consequences potentially associated with output gap mismeasurement are not inevitable, and whether they do or do not materialise crucially depends on the monetary policy strategy followed by the central bank.

Finally, the experience of the Great Inflation decisively refuted the notion of a permanent, exploitable trade-off between inflation and economic activity, which had become part of the conventional wisdom of macroeconomics following the publication of A.W. Phillips' seminal 1958 article.³² Phillips' discovery, based on almost a century of British data, of a negative correlation between inflation and the rate of unemployment was interpreted by many as offering policy-makers a range of combinations of inflation and unemployment to choose from. In particular, it was thought that society could opt to trade off a permanently higher inflation rate against a permanently lower level of unemployment. The experience of the Great Inflation, when higher inflation was systematically associated with a dismal macroeconomic performance on the real side of the economy, laid to rest once and for all the notion of an exploitable trade-off between inflation and real activity, and decisively contributed to the reaffirmation of the "classic", pre-Phillips position that inflation, by distorting price signals, impairs the functioning of market economies and therefore ultimately exerts a negative impact on overall macroeconomic performance.³³ This position, which had been eloquently expressed, around the time of the Great Inflation, by the winner of the 1974 Nobel Prize in Economics, Friedrich Von Hayek,³⁴ is today one of the crucial elements of monetary policy's conventional wisdom, and represents one more key lesson of the Great Inflation episode.

4 CONCLUSION

Three main points should be stressed with regard to the causes of the Great Inflation and its lessons for monetary policy. First, contrary to

the "popular", bad-luck explanation, according to which the inflationary upsurge of the 1970s was simply due to a sequence of adverse supply shocks, the Great Inflation was mainly a result of crucial monetary policy mistakes. This emerges especially starkly from a comparison between the experiences of the United States (which was at the epicentre of the inflationary episode and experienced it in a particularly strong form) and of Germany and Switzerland which, thanks to the adoption of an appropriate counter-inflationary policy, largely succeeded in escaping it. Second, as a logical corollary of this, inflationary outbursts of such magnitude are not inevitable, and can indeed be avoided in the future, provided that the lessons of the Great Inflation are kept firmly in mind. Third, in this respect, both the institutional design of Economic and Monetary Union, with the clear guidance it provides to agents' inflation expectations, and the ECB's monetary policy strategy, with the prominent role it assigns to the monetary analysis, clearly take into account the most important lessons of the Great Inflation.

32 Phillips, A.W., "The Relation between Unemployment and the Rate of Change of Money Wage Rates in the United Kingdom, 1861-1957", *Economica*, 25(100), 1958, pp. 283-99

33 See, for example, the article entitled "Price Stability and Growth", in the May 2008 issue of the *Monthly Bulletin*.

34 In condemning the inflationary policies of the 1970s, Hayek pointed out that "the chief harm that inflation causes [is] that it gives the whole structure of the economy a distorted, lopsided character, which sooner or later makes a more extensive unemployment inevitable than that which that policy was intended to prevent." See Hayek, F. von, "Inflation's Path to Unemployment", *The Daily Telegraph*, 15-16 October 1974, reprinted in Hayek, F. von, *New Studies in Philosophy, Politics, Economics, and the History of Ideas*, The University of Chicago Press, 1978.