

DISCUSSION PAPER SERIES

No. 6156

THE GREAT INFLATION AND EARLY DISINFLATION IN JAPAN AND GERMANY

Edward Nelson

INTERNATIONAL MACROECONOMICS



Centre for **E**conomic **P**olicy **R**esearch

www.cepr.org

Available online at:

www.cepr.org/pubs/dps/DP6156.asp

THE GREAT INFLATION AND EARLY DISINFLATION IN JAPAN AND GERMANY

Edward Nelson, Federal Reserve Bank of St Louis and CEPR

Discussion Paper No. 6156
March 2007

Centre for Economic Policy Research
90–98 Goswell Rd, London EC1V 7RR, UK
Tel: (44 20) 7878 2900, Fax: (44 20) 7878 2999
Email: cepr@cepr.org, Website: www.cepr.org

This Discussion Paper is issued under the auspices of the Centre's research programme in **INTERNATIONAL MACROECONOMICS**. Any opinions expressed here are those of the author(s) and not those of the Centre for Economic Policy Research. Research disseminated by CEPR may include views on policy, but the Centre itself takes no institutional policy positions.

The Centre for Economic Policy Research was established in 1983 as a private educational charity, to promote independent analysis and public discussion of open economies and the relations among them. It is pluralist and non-partisan, bringing economic research to bear on the analysis of medium- and long-run policy questions. Institutional (core) finance for the Centre has been provided through major grants from the Economic and Social Research Council, under which an ESRC Resource Centre operates within CEPR; the Esmée Fairbairn Charitable Trust; and the Bank of England. These organizations do not give prior review to the Centre's publications, nor do they necessarily endorse the views expressed therein.

These Discussion Papers often represent preliminary or incomplete work, circulated to encourage discussion and comment. Citation and use of such a paper should take account of its provisional character.

Copyright: Edward Nelson

CEPR Discussion Paper No. 6156

March 2007

ABSTRACT

The Great Inflation and Early Disinflation in Japan and Germany*

This paper considers the Great Inflation of the 1970s in Japan and Germany. From 1975 onward these countries had low inflation relative to other large economies. Traditionally, this success is attributed to stronger discipline on the part of Japan and Germany's monetary authorities – for example, more willingness to accept temporary unemployment, or stronger determination not to monetize government deficits. I instead attribute the success of these countries from the mid-1970s to their governments' and monetary authorities' acceptance that inflation is a monetary phenomenon. Their higher inflation in the first half of the 1970s is attributable to the fact that their policymakers over this period embraced non-monetary theories of inflation.

JEL Classification: E52, E58, E64 and E65

Keywords: Germany, Great Inflation, incomes policy, Japan and monetary targeting

Edward Nelson
Research Division
PO Box 442
St. Louis, MO 63166-0442
USA
Email: edward.nelson@stls.frb.org

For further Discussion Papers by this author see:
www.cepr.org/pubs/new-dps/dplist.asp?authorid=144589

* I am indebted to Christina Gerberding, Heinz Herrmann, Johannes Hoffmann, Andreas Worms, and the staff of the Deutsche Bundesbank Fachbibliothek for help in obtaining material on Germany, and to Takushi Kurozumi, Michael Nelson, Katrina Stierholz, and Julia Williams for help with other material. Justin Hauke provided research assistance. The views expressed in this paper are those of the author and should not be interpreted as those of the Federal Reserve Bank of St. Louis, the Federal Reserve System, the Board of Governors, or CEPR.

Submitted 08 February 2007

1. Introduction

This paper considers the Great Inflation of the 1970s in Japan and the Federal Republic of Germany. These countries are notable for the fact that their peaks in inflation came earlier in the decade—in 1974—than in many other countries, while their inflation rates in the late 1970s and early 1980s were well below those prevailing elsewhere. A comprehensive explanation for the policy behavior underlying the Great Inflation needs to fit the facts of these two countries. I argue that the monetary policy neglect hypothesis, previously applied to countries with poorer inflation records, can account for behavior in Japan and Germany too.

It has become a cliché to attribute Germany’s success in achieving price stability to greater understanding on the part of German policymakers and population of the costs of inflation (with this, of course, frequently said to be the legacy of its hyperinflations); and similar observations were made about Japan after it joined the low-inflation league. But the discussion in this paper will move away from this kind of explanation for success. Germany’s policymakers certainly stressed the costs to society of even moderate inflation. But this stress was not something that distinguished Germany from elsewhere; in the United States, for example, Federal Reserve Chairman Arthur Burns made many apocalyptic statements about the effects of inflation. Nor is it even clear that Germany’s policymakers exhibited a relatively greater willingness to accept the costs of disinflation. Indeed, those who believe that the differences between Germany and other countries’ inflation performance are attributable to different policymaker preferences may be surprised to find that Helmut Schmidt, Germany’s Finance Minister and then Federal Chancellor over much of the 1970s,¹ stated that “we in the Federal Republic can in any case tolerate 5% inflation more than 5% unemployment” (*SZ*, 12/21/72, *a.t.*).² While Schmidt clarified that this claim was “a political value judgment” and did not reflect a belief that such a choice existed,³ his statement puts in perspective the idea that

¹ Despite the Bundesbank’s independence, it is appropriate to include the executive branch among the key decision makers on monetary policy matters in Germany in the 1970s. The Bundesbank described its 1974 policy changes as “part of a joint strategy agreed with the Federal Government” (*BBAR*, 04/75, p. 1), and the executive branch was the senior partner among the two on key issues such as exchange rate policy. A similar choice underlies Romer and Romer’s (2002) inclusion of the *Economic Report of the President* as among the documents relevant for determining the views underlying U.S. monetary policy in the 1970s, notwithstanding the independence of the Federal Reserve.

² The abbreviation “*a.t.*” denotes the present author’s translation of German material. Appendix A provides acronyms for periodicals cited in the text, while Appendix B gives bibliographic details for specific articles.

³ Consistent with this, it will be shown below that Germany’s policymakers did not subscribe to Phillips curve trade-off analysis.

Germany's success emerged from an especially "hawkish" attitude to inflation compared to other countries.

The belief in policy circles that inflation is very costly to the economy and society therefore does not distinguish Germany and Japan in the 1970s from countries like the United States and the United Kingdom. Rather, the resistance to nonmonetary views of inflation is what makes these countries unusual. As we will see, these views had only a brief heyday in each country (roughly 1971–72 in both countries) and even then, there was successful resistance to the idea of imposing national wage and price controls.

This distinguishing feature is consistent with the monetary policy neglect hypothesis. The message of that hypothesis is that high inflation is the outcome of episodes during which policymakers attributed inflation to nonmonetary factors, delegating inflation control to nonmonetary devices (such as wage and price controls). Disinflations and low inflation periods typically follow the acceptance by policymakers of the monetary view of inflation, and their resulting adjustment of monetary policy. By extensive analysis of statements by policymakers and of key economic commentary during the 1970s, I show that Japan and Germany's inflation-disinflation pattern fits this story.

The experiences of Germany and Japan are natural to study jointly. In the pre-inflation targeting era, Japan's monetary policy, alongside Germany's, was regarded as an international benchmark. This perspective on Japan's record was reflected in the title of a 1981 paper by a senior Bank of Japan official, "Why Is the Performance of the Japanese Economy So Much Better?,"⁴ and prevailed as late as 1993 in the form of the NBER volume *Japanese Monetary Policy*.⁵ Over the same period, Japan was Milton Friedman's favorite example of successful monetary policy (see e.g. Friedman 1983, 1990; and *NW*, 09/04/78). I argue that the key shift in achieving this benchmark was that Japan's emphasis on nonmonetary means of fighting inflation was brief, and over by 1973.

My emphasis on the doctrines guiding policy, and my specific focus on the 1970s, distinguish this study from much of the existing work on these economies. While there are many studies of Bundesbank monetary policy, relatively few contributions cover the major years of Germany's period of inflation. Clarida and Gertler (1997) only briefly

⁴ Suzuki (1981).

⁵ Singleton (1993).

consider the period before 1978; indeed, the earliest statement by the Bundesbank that they consider is from 1989. Bernanke and Mihov (1997, p. 1026) explicitly limit their coverage to that following “the inception of the current regime,” dated as the beginning of 1975. Similarly, Issing (2005) focuses mainly on post-1977 policy developments, which accounts for his characterization of Germany as not having experienced the Great Inflation.

von Hagen (1999a) does cover the leadup to monetary targeting, but his discussion concentrates on the conflicts between fiscal and monetary policy, and does not cover the debate over monetary vs. nonmonetary views of inflation, which had largely been resolved by the time monetary targeting was adopted. By contrast, I study Germany’s Great Inflation and its disinflation, much of which preceded 1975, with emphasis on the conflict between monetary and nonmonetary perspectives on inflation control. This emphasis brings out an element of Germany’s experience highlighted by the Bundesbank in 1980 when it noted that high inflation had arisen during a period of “underestimation of monetary policy as an economic policy instrument.”⁶

Turning to Japan, in addition to several existing studies discussed below, there are antecedents to my analysis in the form of the aforementioned Friedman discussions, as well as Hetzel (1999). Friedman (in *NW*, 09/04/78) discusses Japan’s “fundamental change in monetary policy” in 1973 which amounted to an acceptance that “[s]ubstantial inflation is a monetary phenomenon.” Hetzel studies Japan’s postwar monetary policy, and makes the important observation that Japan’s 1970s disinflation produced a “profound change in professional and popular views” (1999, p. 7) discarding nonmonetary views of inflation, a conclusion supported by the analysis provided here. But neither Friedman nor Hetzel provides specific documentation of these changes in views. The discussion in this paper fills this gap, by drawing on coverage of inflation in Japan in several newspapers during the 1970s.

In addition, while both Friedman and Hetzel emphasize that a floating exchange rate enabled Japan to disinflate, they do not discuss why Japan chose disinflation when other countries that floated, such as the United Kingdom, initially chose monetary expansion after floating their exchange rate. I provide an answer by studying developments in Japanese macroeconomic debates. Furthermore, the only policymaking agency Hetzel

⁶ Deutsche Bundesbank (1980, p. 291).

discusses is the Bank of Japan. This is problematic in studying the 1970s, because (a) the Bank of Japan was not independent over this period, so senior members of the Japanese Government were key makers of monetary policy;⁷ and (b) when nonmonetary views of inflation guide policymakers, some of the major policy mistakes will take the form of attempting nonmonetary strategies against inflation. My focus on a wider range of policymakers and policy agencies overcomes this limitation.

The analysis here also sheds light on the merits of accounts of Japan and Germany's success that emphasize nonmonetary factors. There is wide acceptance among monetary economists that differences in monetary policy account for different countries' inflation experiences during the 1970s. Nevertheless, adherents to nonmonetary views of inflation have offered their own rationalizations for the price stability observed in Germany and Japan. For example, in 1977 Denis Healey, the U.K. Chancellor of the Exchequer, said: "If you talk to West German Chancellor Helmut Schmidt about his country's successes, he will say that the moderation of the unions in Germany, in limiting their wage demands, is largely due to the political relationship established between the Government and the unions" (*SUN*, 03/09/77). Similarly, Braun (1986, p. 240) claims that the "Concerted Action" incomes policy in Germany "proved to be useful in promoting wage moderation in 1973–75," while a former U.S. Ambassador to Germany asserted that moderate union behavior in German wage negotiations "lowered cost-push [pressures] and was certainly an important reason for the relatively favorable inflation rate."⁸ Discussions of "Japan Inc." during the 1970s adopted an analogous line of argument for Japan, and along these lines a Tokyo economics columnist observed in 1978, "Much of Japan's success in fighting rampant inflation has been ascribed... particularly to the Japanese version of an 'incomes policy' designed to restrain wage increases" (*JT*, 10/16/78). I provide evidence on whether these frequently cited features of German and Japanese economic policy made any material contribution to fighting inflation.

This paper proceeds as follows. Section 2 discusses the monetary policy neglect hypothesis. Section 3 covers Japan, and Section 4 covers Germany. Section 5 draws two major generalizations regarding the two countries' experience, and their implications for the literature on the Great Inflation. Section 6 concludes.

⁷ Friedman (*NW*, 09/04/78) acknowledges the Minister of Finance's role in producing the 1973 change in monetary policy.

⁸ Hillenbrand (1983, pp. 25, 27).

2. The monetary policy neglect hypothesis

Consider an expectational Phillips curve in generic form:

$$\pi_t = \pi^e + \alpha(y_t - y_t^*) + u_t \quad (1)$$

where π_t is quarterly inflation, π^e is expected inflation, $y_t - y_t^*$ is the output gap, and u_t is a shift factor (a cost-push shock). Written in terms of equation (1), the Phillips curve delivers special cases such as a traditional shift-adjusted expectational Phillips curve (as in e.g. Humphrey, 1985), where π^e is $E_{t-1}\pi_t$, or the New Keynesian Phillips curve augmented by a cost-push shock, used by Clarida, Galí, and Gertler (1999), where π^e corresponds to expected future inflation $E_t\pi_{t+1}$. The latter version of the Phillips curve allows the u_t shock to be serially correlated.⁹ It is clear that if u_t is serially correlated, it matters for both inflation and expected future inflation, and becomes the sole determinant of these two series if $\alpha = 0$. If we consider the New Keynesian Phillips curve further, and generalize to allow for a constant term, as well as the usual $\beta < 1$ coefficient on expected inflation, it can be shown that the expression for expected future inflation is:

$$E_t\pi_{t+1} = K + \alpha E_t \sum_{i=0}^{\infty} \beta^i (y_{t+i+1} - y_{t+i+1}^*) + (1 - \beta\rho_u)^{-1} \rho_u \hat{u}_t, \quad (2)$$

where K is a constant, ρ_u is the AR(1) coefficient for the exogenous u_t series, and \hat{u}_t is the deviation of u_t from its mean.

Nonmonetary and monetary views of inflation deliver rival sets of restrictions on equation (2). The monetary view asserts that $\rho_u = 0$ (implying that \hat{u}_t does not matter for expected future inflation), that $E[u_{t+k}] = 0$ for all k (and so expectations of u do not matter for the constant term K), and that $\alpha > 0$ whatever the value taken by the output gap. The monetary view of inflation thus attributes the 1970s inflation to excess demand and gives cost-push shocks no role other than as one-time price-level shocks (which, for a given expected path of the output gap, matter for current inflation but not expected future inflation).

The nonmonetary view of inflation, by contrast, contends that $E[u_{t+k}]$ is generally nonzero and that high inflation reflects high current and prospective values of u_t ; that $\rho_u > 0$; and

⁹ In the traditional Phillips curve corresponding to $\pi^e = E_{t-1}\pi_t$, a serially correlated u_t cannot be contemplated in general.

that $\alpha = 0$ when the output-gap sum in equation (2) is negative. The nonmonetary view of inflation thus attributes the 1970s inflation to cost-push shocks, and implies that creating negative output gaps does not remove inflationary pressure.

The monetary policy neglect hypothesis states that the monetary view of inflation is the correct one, but that high inflation periods during the 1970s were the result of policymakers' embrace of the nonmonetary view of inflation. This hypothesis has previously been applied to countries whose inflation rates were generally high throughout the 1970s,¹⁰ but has implications for low-inflation experiences too. According to this hypothesis, countries that experienced relatively low inflation, such as Japan and Germany from 1975 onward, did so because their policymakers converted early to a monetary view of inflation. The remainder of this paper documents the case for the monetary policy neglect hypothesis as a description of these two countries' experiences, as well as pointing out weaknesses of alternative hypotheses.

3. Japan

This section studies Japan's Great Inflation and disinflation in detail. The documentary source used to obtain contemporaneous statements by Japan's policymakers is principally the Tokyo English-language daily newspaper, the *Japan Times*, which during the 1970s also provided translated excerpts from other Japanese dailies. In addition, I draw on coverage of Japanese economic policy that appeared in the Asia-region newspapers *South China Morning Post* (Hong Kong) and *Straits Times* (Singapore), as well as material in newspapers from the United States, United Kingdom, and other countries.

3.1 1969–73: Increasing monetary policy neglect

At the end of the 1960s, Japan remained on a completely fixed exchange rate. What domestic policymakers thought about how to control inflation nevertheless mattered greatly—first because there was considerable monetary policy autonomy in practice despite the fixed exchange rate; secondly because erroneous views about inflation behavior meant that the implications of the fixed exchange rate regime for inflation control were misunderstood.

¹⁰ Nelson (2005) provides evidence supporting the hypothesis for the United States and the United Kingdom.

In this light, it is significant that as of late 1969, Japanese policymakers characterized the control of inflation as largely separate from monetary policy. Prime Minister Sato said in the Diet: “The stabilization of consumers’ prices is the important task for protecting the national livelihood, and it is here that the Government has devoted its greatest effort. While restraining as far as possible the prices of public utilities, I intend to stabilize the consumers’ prices through strong policy drives for further growth in productivity, mobility of the labor force, and liberalization of imports” (*JT*, 12/02/69).

While denying that excess demand currently existed, the authorities did acknowledge the prospect of an excess emerging and thereby *becoming* a source of inflationary pressure. The Bank of Japan’s discount rate was raised to 6.25% in September 1969, with Finance Minister Fukuda citing “the pace of demand expansion” and the risk of overheating as the reason for the change (*AUP*, 10/07/69). While it may seem jarring to see domestic reasons alone given as the reason for the interest-rate increase, it is true that foreign exchange controls gave Japan’s authorities considerable liberty in manipulating domestic interest rates while maintaining a fixed exchange rate.¹¹ Apparently, however, policymakers were satisfied that this single tightening was sufficient; after the 1969 increase, the discount rate was held constant until October 1970, when it was reduced to 6%. The reason for this reduction, it was reported, was that Japan’s policymakers believed that monetary restriction had achieved its purpose of slowing down the economy (*JT*, 10/28/70).

The *Japan Times* editorialized in February 1970 that wage increases in the preceding four years had been “determined by the strong-arm tactics of labor unions... If this trend continues... [it] may create a serious ‘cost inflation’” (*JT*, 02/01/70). The Government was likewise disposed to analyzing inflation in terms of unit cost developments, but at this stage was less inclined to appeal to wage-push as a source of inflation. Vice-Minister Kashiwagi expressed a relaxed view: “I anticipate no difficulty because of this rate of wage increase, for worker productivity will increase [by] up to 15 per cent a year and industry therefore will be able to offset the wage increase” (*AZR*, 05/13/70).

In July 1970 Miyoehei Shinohara, an official of the Economic Planning Agency (EPA), called for an incomes policy to cover both wage and non-wage incomes (*JT*, 07/10/70),

¹¹ Consistent with this, Rasche (1990, p. 35) observes that there are very large discrepancies in the behavior of short-term market interest rates across the United States and Japan over the quarter-century 1956–80, a period that includes the 1969–80 period studied here.

and in December the EPA cited wage-push as a source of prospective stagflation in Japan. This was noted as “the first time that the danger of a ‘cost-push’ inflation has been warned in an official government document” (*JT*, 12/05/70). It would be inaccurate, however, to say that cost-push views had not guided official policy by this point; the Government’s efforts in 1969 to restrict increases in public services’ prices were informed by cost-push analysis, and this approach continued in December 1970 with an indefinite freeze on public charges (*JT*, 12/10/70). The elevation of wage-push to the top of the Government’s list of cost-push factors was confirmed when Prime Minister Sato himself cited wage-push. He signaled that a formal incomes policy was an option: “I am afraid the Government might have to adopt an incomes policy under the circumstances... An incomes policy never has succeeded anywhere in the world, but as prices will not become stabilized as long as large pay raises continue, I would like to work out some countermeasures” (*SCMP*, 12/12/70).

From a monetary perspective on inflation, the really urgent countermeasure Japan needed was greater exchange rate flexibility, a precondition for an assured monetary policy tightening within Japan. But Bank of Japan Governor Sasaki denied that revaluation would help, claiming that the German experience confirmed this (*JT*, 03/11/71). The opposition to revaluation was rendered moot by what in Japan was labeled the “Nixon shock”: the measures that included U.S. dollar devaluations in August and December 1971. The Bank of Japan cut interest rates over this period, with the discount rate in early 1972 standing at 4.75%, the lowest level since 1948 (*JT*, 05/31/72). As well as aimed at restraining the exchange rate, these cuts had a domestic motivation: the *Japan Times* noted that the Government was attempting “to take up the slack in the private sector of the economy... [via] a low rate [of] interest policy” (*JT*, 01/04/72). The *Times* claimed that any inflationary impact of such stimulus would be precluded by the “big excess capacity in the economy” (*JT*, 01/14/72); indeed, it said that this policy might *help* on inflation by cutting business costs. In late 1972, Governor Sasaki expressed satisfaction that the economy was recovering but not overheating (*JT*, 12/25/72), and it was not until February 1973 that a Bank of Japan official said that the output gap was now almost closed (*JT*, 02/08/73).¹²

¹² Ueda (1993, p. 193) confirms that the Bank of Japan relied on output gap measures that underestimated the strength of demand in 1972–73. Since the Bank in early 1973 realized that the gap was closing rapidly, it at least had a more accurate estimate of the output gap than those provided at the time by the OECD (1973, p. 22) which gave Japan’s output gap as –5.9% for 1972 on average and as –5.0% for the second half of 1972.

3.2 1973–74: Monetary tightening

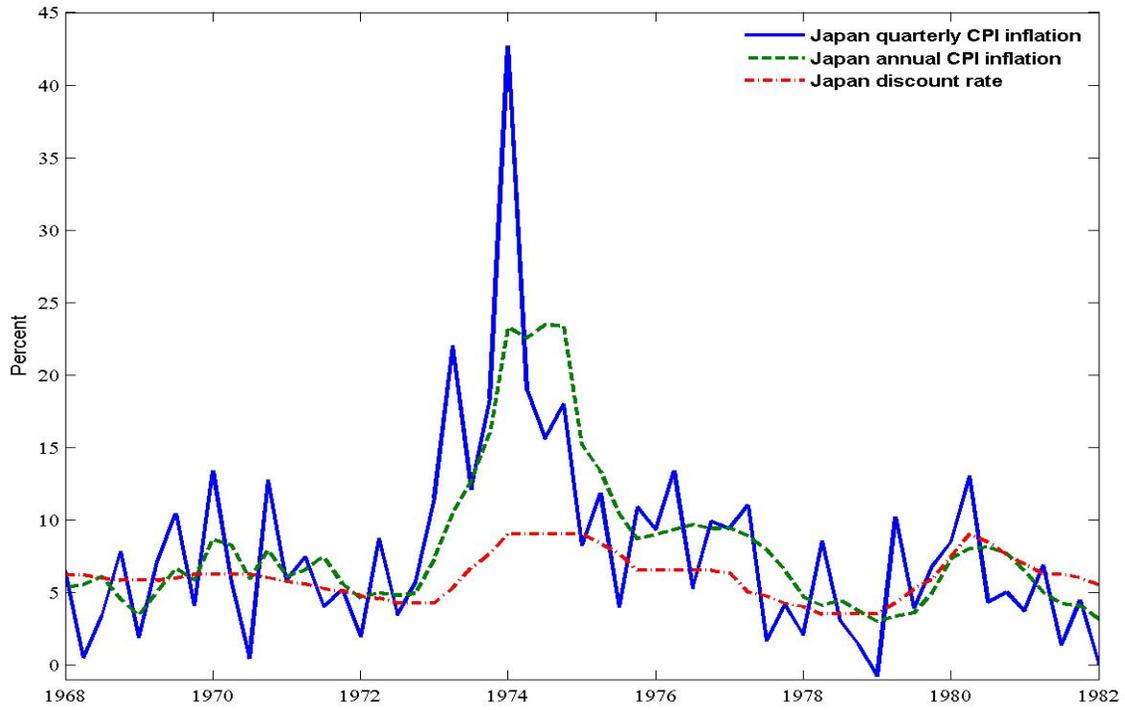
Two events combined to create the conditions for a significant monetary policy tightening from March 1973; first, the collapse of the remaining Bretton Woods arrangements, and secondly, the recognition that the economy was overheating. Even in the nonmonetary view of inflation, a positive output gap produces inflationary pressure and justifies a tightening of aggregate demand. As noted above, under the fixed exchange rate regime Japan's policymakers retained some discretion with respect to domestic interest rates. But over 1971–73 there had been repeated cuts in these rates, so monetary policy had if anything reinforced the tendency for the fixed exchange rate to generate monetary expansion. This ease now began to be removed. The Bank of Japan's discount rate was increased by 75 basis points in March 1973, and Prime Minister Tanaka approved another increase in May 1973 with the statement that he would “tighten the credit squeeze in order to restrain total demand” (*JT*, 05/26/73). As one Japanese news commentary put it: “Now that the prerequisite [of fixed exchange rates] is gone, the central bank focuses its attention on curbing inflation” (*NKS*, 04/11/73).

Though a record in nominal terms, the discount rate was well below inflation throughout 1973 and subsequently (Figure 1). But more important was the direction of monetary policy implied by discount-rate choices. Not only did market rates such as the call rate have a considerable spread above the discount rate, but *changes* in the discount rate seem to have had a more than one-for-one impact on the call rate during the 1973–74 monetary tightening (Figure 2). Combined with their impact on other asset prices such as the exchange rate, the 1973 discount-rate increases packed a considerable punch, confirmed also by the sharp slowdown in M2 growth from 1973.¹³

The Japanese Government was, however, by no means convinced that eliminating demand pressure was all that was needed to curb inflation, and in April 1973 announced several measures inspired by the cost-push view, including increased surveillance of prices of both domestic and imported goods (*JT*, 04/14/73). Supporting this eclectic approach, the president of Tokai Bank was reported as favoring “nonmonetary measures in order to curb inflation.” Such views, the *Japan Times* reported, were in line with “the

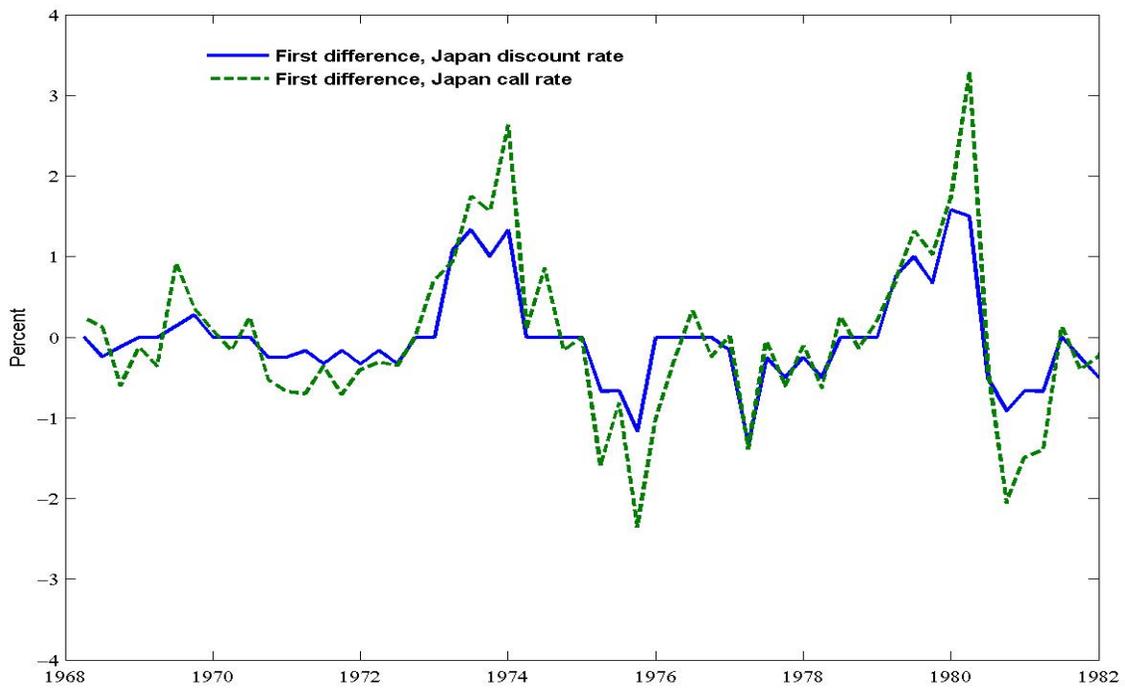
¹³ The fact that other key yields moved in the same direction as the discount rate over the 1970s, albeit not proportionally, supports the focus on that rate in the discussion here. That is, while many asset prices matter for aggregate demand, their reaction to monetary policy operations is assumed to be approximately collinear with that of the short rate. This approximation is also that taken by West (1993) in studying the post-1973 period.

Figure 1. Inflation and the discount rate in Japan



Note: Calculated from Haver-IFS data

Figure 2. Short-term interest-rate changes in Japan



belief held by many economists here that the Japanese economy is faced with ‘composite inflation’”—that is, cost-push beside the excess-demand problem—“which cannot be suppressed by conventional monetary instruments” (*JT*, 05/30/73). Monetary tightening was seen as helpful in moving the output gap to zero and thus removing excess demand as a contributor to inflation; but, it was believed, this would still leave inflation in the system that had to be attacked with nonmonetary instruments. Always implicit in this position was the view that negative output gaps did not exert negative pressure on inflation. The *Nihon Keizai Shimbun* newspaper¹⁴ endorsed this view, claiming that “it is no longer possible to curb inflation by tight money alone” (*NKS*, 05/30/73).

In July 1973, Prime Minister Tanaka said he expected the tight monetary policy to bring inflation back under control during October-December, and that if this did not occur he would consider a wage freeze (*JT*, 07/06/73). His overconfident statement reflects lack of appreciation of the magnitude of lags between monetary policy actions and inflation. What is more, he was making a statement that, if proved wrong, would reduce general confidence in monetary tightening as the solution to inflation.

This unwise statement did not, however, lead to a change in monetary policy strategy. When, in November, high inflation was still proceeding, Tanaka suggested that demand was still too strong (*JT*, 11/02/73). In December 1973, he said categorically: “The present situation does not warrant the adoption of an incomes policy” (*JT*, 12/09/73). The Government’s reaction in December 1973 to continuing inflation and the OPEC oil shock did include some nonmonetary attempts to fight inflation, such as a freeze on rice prices and rail fares (*JT*, 12/22/73a). But a prominent role was given to what the Government called “utmost efforts... to curb demand” (*JT*, 12/22/73a), including a 2% increase in the discount rate to a record 9% (*JT*, 12/22/73b), implying also a sharp increase in the nominal call money rate (Figure 2).

3.3 1974–75: On the brink of a U-turn

While still following restrictive demand policies, the Government continued to hold the position that wage-push could produce an independent effect on inflation. Prior to the 1974 wage negotiations, Prime Minister Tanaka urged labor to “exercise restraint,”

¹⁴ According to the *New York Times*, the *Nihon Keizai Shimbun* was “Japan’s leading economic newspaper” over this period (*NYT*, 06/12/74).

stating: “Excessive wage increases... invite higher prices” (*JT*, 02/22/74). *The Economist* claimed that it was “hard to see where prices will stop” unless an incomes policy was introduced (*TE*, 01/05/74); and when the outcome of the spring wage negotiations was 30% nominal wage growth, an economist at the Japan Development Bank said that Japan was now approaching “fast-paced cost-push inflation” which aggregate demand measures could not solve (*JT*, 06/21/74). Similarly, Finance Minister Ohira said in August 1974 that cost-push pressure, manifested in the “vicious circle of prices and wages,” was Japan’s main economic problem (*JT*, 08/03/74).

In January 1974 Japan’s annual CPI inflation passed 20%. It stayed above 20% throughout the year. In the face of this, in the final quarter of 1974 the predominance of cost-push views threatened to produce a major policy change. In October 1974, the Cabinet set a goal of limiting inflation to 15%, with the Prime Minister’s Office seeing restraint on public utility prices as a key weapon (*JT*, 10/12/74). These had featured in anti-inflation packages in previous years; their continued use did not in themselves augur a major policy change. But Prime Minister Tanaka also indicated he would not rule out introducing wage controls, and was quoted as wishing “to sever the vicious cycle of prices and wages, and promote harmony between the wage problem and the whole national economy” (*SCMP*, 10/08/74). More promisingly, these government pronouncements were not at the expense of continuing monetary restriction; rather, as the *Japan Times* put it, there remained “a fairly solid and welcome consensus among Government leaders that the restrictive demand management policy should be continued for the supreme objective of slowing inflation” (*JT*, 10/23/74). Later in October, however, the Bank of Japan’s Governor said, “We have reached a point where money can’t be tightened any further” (*JT*, 10/29/74), and in December Deputy Prime Minister Fukuda said that Japan’s inflation was now “cost-push” (*JT*, 12/19/74).

The decline in inflation in 1975 (Figure 1) was sufficiently dramatic to hold off a shift to a nonmonetary strategy against inflation, and official statements during 1975 took a more orthodox tone. In particular, demand restriction was reaffirmed as effective against inflation, and a negative output gap was seen as removing inflationary pressure. Deputy Prime Minister Fukuda said that while production was stagnant, “the problems of prices and wages are still a matter of great concern and, therefore, the demand-curbing policy should be continued” (*JT*, 01/18/75). Similarly Prime Minister Miki said that while “there is no denying the fact that business is becoming increasingly stagnant,” continuing inflation meant “it is not feasible to lift the current restrictive measures on total demand”

(*JT*, 01/25/75). While the discount rate had not been raised during the very large increase in inflation during 1974, neither was it reduced during the first quarter of 1975, by which time statistics were indicating that the economy had contracted during 1974 and that annual inflation was falling rapidly. The fall in inflation was generally recognized as a reaction to the demand restraint: for example, a correspondent for Singapore's *Straits Times* observed, "Japan's determined anti-inflation campaign is beginning to slow the rise in prices... [T]he inflation rate... seems to be coming down because of the recession" (*STR*, 01/29/75). This was a breakthrough because the recession was widely seen, including in official estimates,¹⁵ as having turned the output gap sharply negative—a "deep slump" in the *New York Times*' estimation (*NYT*, 06/12/74). Therefore, to attribute the inflation decline to the recession was to reject the cost-push position that negative gaps do not pull down inflation.

3.4 1975–79: Entrenching the monetary control of inflation

The first change to Japan's discount rate since 1973, a 0.5% cut to 8.5%, was made in April 1975. Bank of Japan Governor Morinaga announced the cut with the caveat: "The discount rate cut does not mean a drastic policy shift; only the signal has changed, from red to reddish yellow" (*NKS*, 04/16/75). This was a modest cut compared to that being urged by the Prime Minister's Price Stabilization Council, which had advocated a 150 basis-point reduction and had argued such a move would be anti-inflationary by cutting business costs (*JT*, 04/21/75). The maintenance of monetary restraint reflected the fact that cost-push views like this were continuing to lose influence. But interest cost-push views did creep into Deputy Prime Minister Fukuda's analysis when he justified an additional 50 basis point cut in June 1975 as one that would stimulate the economy and reduce pressure on prices (*JT*, 06/09/75).

The predominant trend continued to be in the direction of further endorsement of a monetary view of inflation. The President of the Bank of Tokyo said in May 1975 that the "policy of restraining aggregate demand, especially on the monetary front, that had been pursued since the beginning of 1973, has resulted in a pronounced slowing of price advances this year" (*JT*, 05/31/75). The Government White Paper on the economy attributed 1973–74's inflation largely to excessive demand, and said that inflation had been reduced at the cost of recession (*JT*, 08/09/75; *JT*, 08/14/75). Further evidence of

¹⁵ E.g., in an Economic Planning Agency report released in August 1975 (*STR*, 08/19/75).

the impact of the monetary restriction came in late November, when it was revealed that nationwide annual CPI inflation had fallen below 10% in October, the first single-digit rate since early 1973 (*JT*, 11/29/75).

By March 1976, it was clear that the Government had achieved its goal of bringing down inflation to single digits for the 1975–76 fiscal year (*JT*, 03/29/76), and its aim for 1976–77 was to bring inflation down further to a maximum of 8.6% (*JT*, 01/29/77). From a monetary perspective on inflation, a decline of this magnitude was close to being locked in by the prior period of monetary restraint and subsequent permanent reduction in money growth. From a cost-push perspective, there was no such guarantee, and the *Japan Times*, taking this approach, was pessimistic: “Cost-push inflationary pressures remain strong... There is indeed a possibility that we might see the inflation rate soar to a double-digit level again” (*JT*, 11/15/76). Inflation for the fiscal year ending in March 1977 ultimately came in at 9.4% (*JT*, 04/29/77), an interruption of the decline since 1974. The Government set a target of 7% for fiscal year 1977–78 (*JT*, 04/28/77). The overshoot of the 1976–77 target proved to be an aberration, out of line with the monetary restraint observed since 1973; it was compensated for by the rapid decline in inflation in 1978. In July 1978, the *Japan Times* observed, “Perhaps the most striking development on Japan’s domestic economic scene today is regained price stability” (*JT*, 07/26/78), with CPI inflation around 4%, well below the 7% maximum target. Nevertheless, the article acknowledging this achievement attributed it to the recent yen appreciation rather than the turnaround since 1973 in monetary policy.

All these developments were against the background of the major post-1973 productivity slowdown. Much commentary in Japan in 1973–74 accurately saw the economy as undergoing a permanent shift in its trend growth rate. For example, the *Japan Times* editorialized at the end of 1973 that it was “broadly discerned that the country must save energy consumption and settle for a much lower rate of growth in the future” (*JT*, 12/30/73), while Finance Minister Fukuda said in May 1974 that in coming years Japan would seek a growth rate “acceptable by international standards” and could not return to the 15% growth rates experienced in the past (*JT*, 05/10/74). So estimates of the output gap in the years following 1973 were not on the grossly erroneous scale that would have resulted from assuming no change in the trend of potential output in years after 1973,¹⁶

¹⁶ Thus estimates were not as severely in error as those later given by Brown and Darby (1985, pp. 71–75), who estimated potential by fitting a log-linear trend to Japan’s real GDP over 1952–79. Because it was heavily affected by the pre-1974 trend, this procedure resulted in a negative and continuously worsening

but the scale of Japan's slowdown meant substantial output gap errors. An OECD report released in mid-1977 gave Japan's output gap as about minus 13.5 percent as of the end of 1976 (McCracken *et al* 1977, p. 84). This was likely more pessimistic than the Japanese Government's estimates of the output gap, for the OECD, unlike the Government, did not acknowledge any quarter of positive output gaps in Japan since 1970, not even in 1973.¹⁷ Within Japan, the *Japan Times* in late 1977 said there was a "huge surplus of productive capacity" of "well over 10 trillion yen" (*JT*, 09/08/77)—i.e., an output gap of at least –6%. The Government itself set a real GDP growth target of 7% for 1978–79 (*JT*, 01/22/78) and as part of this program the discount rate continued to be cut, to 3.5% in early 1978, with implied bank lending rates of about 5.9% (*JT*, 03/16/78; *JT*, 06/23/78). In October 1978 the Administrative Councilor of the Economic Planning Agency gave Japan's output gap as –11% as of the previous March (*JT*, 10/06/78).

Despite this perceived large gap, the authorities in April 1979 increased the discount rate for the first time since 1973. Analyzing this increase, the *Japan Times* said that "the Bank of Japan let it be known on Monday that it is determined to fight a resurgence of inflation" (*JT*, 04/18/79), with the authorities in particular wishing to avoid excessive money growth of the kind observed in 1972–73, and to forestall a continuation of rising wholesale price inflation. Discussing the increase in wholesale inflation, Japan's Official Government Bulletin cited rising oil and commodity prices, but also acknowledged that "improvements in the supply and demand situation"—that is, a diminishing output gap—were a contributing factor (*JT*, 06/26/79). This contrasts with the authorities' position in 1972, when they did not regard a narrowing of the gap as a signal for tightening. The change in the gap was now given weight in policy decisions—thus embedding into monetary policy a "speed-limit" dimension, in the terminology of Walsh (2003).¹⁸

In late 1978, the approach of basing policy decisions on variables other than the estimated output gap level was consolidated when the Bank of Japan announced forecasts for M2 growth (e.g. Hamada, 1985). These were not formally labeled targets, but Bank of Japan Governor Morinaga said, "I'll carry out monetary policy while closely watching the movement of money supply" (*NYT*, 12/28/78). Thus, even before the series of

output gap series for Japan over 1976–79, with the 1979 output gap more negative than minus 12%. In contrast to this series, estimates of the output gap used by Japanese authorities in the late 1970s did record that the output gap was becoming less negative over 1978–79.

¹⁷ Laidler (1978, p. 1043).

¹⁸ See Section 3.5 below for further discussion.

discount-rate increases began in 1979, Morinaga had signaled that continuing high money growth would lead the authorities to raise interest rates.

Not only were the authorities tightening ahead of much of the actual increase in CPI inflation, they were still ahead of much opinion on the role of monetary policy in fighting inflation. A May 1979 commentary in the Kyodo News Service on the Bank of Japan's discount rate increase was entitled "Credit Policy Unlikely to Affect Inflation." It said that strengthening demand had "not as yet been much of a factor" in wholesale price increases, and downplayed the contribution monetary policy could make if CPI inflation did worsen: "[R]eliance must be put on other policy measures. Fiscal policy will have to be tightened... More vigorous action must be taken to strengthen the yen's exchange rate and bring down the cost of imports. Imports, especially of manufactured goods, must be increased... The means to check inflation are readily available" (*KYO*, 05/23/79).

Further discount-rate increases took place over 1979–80, with a 100 basis-point increase in February 1980 justified by Bank of Japan Governor Mayekawa as an inflation-containing action in the face of a tightening of the demand-supply position (*JT*, 02/19/80). In contrast to the tentative support for incomes policies voiced by policymakers during 1970 and 1974, a Bank of Japan official observed in 1980: "No incomes policy could conceivably be effective... [O]rthodox policies... are valid enough to check home-made inflation."¹⁹

3.5 Lessons from Japan's experience

Several lessons emerge from Japan's Great Inflation and disinflation. First, while Milton Friedman's (1990, p. 107) observation that "no control of individual prices nor of individual wages" during the 1973–74 monetary tightening is an overstatement—Japan's Government did impose limits on price increases on specific goods—the controls applied to a small portion of the price index, and inflationary pressure suppressed by the controls could easily be transferred to other prices. Therefore, Japan's disinflation cannot plausibly be attributed to incomes policy.

Secondly, Japan, like other countries, had a period during which policymakers were inclined to adopt general wage and price controls because they believed inflation had

¹⁹ Suzuki (1981, p. 412).

become cost-push in character. But in Japan's case the strongest doubts came just before a drastic decline in inflation in 1974–75, and this decline, coming in the wake of severe monetary restraint, served as a powerful rebuttal of the view that inflation was insensitive to negative output gaps.

Thirdly, Japan's policymakers recognition of an excess-demand problem in 1973 was superior to that of outside agencies such as the OECD (1973). This may have reflected greater weight given to money (M2) growth, which had risen about 8 points over 1970–73, as an indicator of pressure on aggregate demand.

Fourthly, the post-1973 slowdown meant that Japanese policymakers' output gap estimates were probably substantially biased in the later 1970s; nevertheless, disinflation proceeded over these years. Again, the emphasis on money growth may have helped in focusing policy away from the gap level. But Japan's officials also indicated that they tightened monetary policy in response to positive output-gap *growth*. This “speed-limit” policy reaction could be rationalized by a variety of theories. The most traditional, but least consistent with modern inflation analysis, is that the growth rate of the gap appears directly in the Phillips curve. More consistent with a New Keynesian analysis is the view that output-gap changes suggest revisions to the expected path of the output gap level, and so a revised inflation forecast. Responding to them is in effect a back-door way of responding to the correctly-measured (expected path of the) level of the output gap. Regardless of the specific rationale, emphasis on output-gap growth insulates monetary policy decisions from output gap mismeasurement, since errors in gap level estimates tend to be persistent and largely cancel from the growth rate, as discussed in Giannoni (2002), Orphanides (2003), and Orphanides and Williams (2006).

In the present instance, there was a specific type of output gap error which policymakers' response to growth rates protected against: the actual late-1970s output gap in Japan was closed well before real-time estimates of the gap stopped being negative. Percentage changes in variables have turning points that precede those of their corresponding levels,²⁰ so a policy tightening in response to an *estimated* positive output gap *growth rate* proved, ex post, to be a tightening in response to an *actual* positive output gap *level*.

²⁰ See e.g. Culbertson (1960) for a vintage discussion.

4. Germany

This section covers the inflation-disinflation period in Germany over 1969–80. I draw on coverage of, and commentary on, monetary policy and inflation in the German press, and discussions of Germany in several other countries' newspapers, as well as Bundesbank reports, speeches, and testimony.

4.1 1969–71: Orthodox response to inflationary pressure

Germany was more integrated than Japan into the international financial system over the Bretton Woods period, and so its policymakers' scope to vary the official discount rate for reasons other than the exchange rate parity was more limited than their counterparts' in Japan. Beginning in the late 1960s, however, the authorities began taking steps to shield Germany from U.S. monetary expansion. These measures included temporary exchange rate floats in late 1969 and May-December 1971, and an intensification of foreign exchange controls in mid-1972, discussed below.

The limited monetary policy independence bought by these measures led to a series of monetary tightenings, including an increase in the discount rate from 6% to 7.5% during March 1970. Economic overheating and inflationary pressure were cited as reasons for the tightening, with the Bundesbank's Vice-President, Otmar Emminger, observing, "If there is no improvement in wage and price developments, we'll naturally be forced to go on making monetary policy very restrictive" (*DS*, 07/20/70, *a.t.*). By the time this statement was published, however, the constraints imposed by the exchange rate policy had been made plain by the fact that in July 1970 the Bundesbank removed some of its March tightening, cutting the discount rate from 7.5% to 7% (*WSJ*, 07/16/70). With its room to move on interest rates limited, the Bundesbank attempted to rely on reserve-requirement increases in April and June 1970 (*JT*, 06/20/70), measures unlikely to affect aggregate demand when not accompanied by interest-rate increases.

A speech by the Federal Finance Minister, Karl Schiller, in September 1970 clearly recognized the absence of a long-run inflation/unemployment trade-off: "Inflation is like a drug. For a short time it makes our society feel 'high' ... Then it becomes apparent that the 'trip' has not solved any problems and even created new ones." Schiller was, however, eclectic in his picture of the solution to inflation, describing incomes policy,

monetary policy and fiscal policy as “complementary sets of policy instruments” (*AUP*, 09/24/70).

4.2 1971–72: The monetary policy neglect period

It was from early 1971 until mid-1972, in the wake of double-digit annual nominal wage growth in 1970–71 and the apparent elimination of excess demand, that cost-push views reached their high-water mark in German debate. As early as January 1971, an authoritative statement making heavy concessions to the cost-push view appeared in the form of an address by Bundesbank President Karl Klasen. In line with cost-push views, Klasen endorsed the position that present wage growth rates were “not justified by economic conditions,” excess demand having passed. Klasen saw the German Government’s “Concerted Action” program, a consultation process among labor, firm, financial, and government leaders, as a potentially valuable anti-inflation instrument. Nevertheless, Klasen demonstrated that thinking in Germany at this point was more orthodox than elsewhere. In contrast to Federal Reserve Chairman Arthur Burns’ position at the time, Klasen deplored compulsory price controls as part of the solution; moreover, he rejected the view that monetary policy actions had become ineffective, and indeed indicated that the Bundesbank’s recent decision not to cut the discount rate reflected a wish “to prevent continuing price rises” (*AUP*, 02/02/71).

By the same token, continuing inflation (at about 4.5% per annum), and the danger that monetary easing could help transfer wage pressure into price inflation, were cited by the Bundesbank when it again held the discount rate constant in March (*IP*, 03/18/71). This position received support from a front-page editorial entitled “Cost Inflation” in the *Frankfurter Allgemeine Zeitung*. Proclaiming that it was “unambiguous how strongly the wage spiral has contributed to the decline in the value of money,” the newspaper rejected the view of “some critics... that the Bundesbank’s measures are not effective,” and supported monetary restraint as a response to wage-push (*FAZ*, 03/18/71, *a.t.*). This position was in harmony with the monetary view of inflation, which states that monetary policy can block current wage inflation developments from spilling over into expectations of future price inflation.

But it was over precisely this period, early 1971, that a shift took place in official opinion away from orthodox views on inflation behavior. The motivation for this shift was the change in the aggregate demand picture. Estimates by the OECD constructed in early

1973 (OECD, 1973, pp. 29–32) suggested that Germany’s output gap peaked at +1.3% in the first half of 1970, averaged +1.0% in first-half 1971 and turned to –1.5% in the second half of 1971. These were not based on German government sources, but the January 1971 statement by Bundesbank President Klasen mentioned above indicates that German policymakers thought the gap was zero by 1971 Q1. Therefore, like the OECD, German policymakers thought that excess demand had peaked in 1970, but unlike the OECD, they believed it was gone altogether by early 1971.

With inflation rising during 1970 and 1971, policymakers and opinion leaders were susceptible to explanations for inflation that attributed it to nonmonetary factors—instead of (correctly) viewing the inflation as the result of the pre-1970 monetary ease working its way through the system. As we have seen, by early 1971 Klasen was already attributing substantial wage inflation to cost-push forces. The longer price inflation proceeded at high rates after 1970, therefore, the more likely it was to be attributed solely to factors other than excess demand. Sure enough, Jürgen Husmann, the deputy economics director of the German Employers’ Federation, said in March 1971: “the recent price increases are not demand-induced. They arise from increases in wage costs” (*DT*, 04/01/71). The *Financial Times* had already been quick off the mark, stating in January 1971 that “the easing of demand pressure has had no effect on the inflationary wages-prices spiral... Germany’s inflation is now of the cost-push rather than the demand-pull variety, and consequently more difficult to control” (*FT*, 01/01/71).

Assessments like this prevailed in policy circles too, with Finance Minister Schilling in September 1971 describing “cost pressures” as a separate cause of inflation distinct from excess demand (*AUP*, 10/05/1971). Indeed, shortly after the May 1971 exchange-rate float, Schilling saw the economy as having featured the removal of overemployment, and believed “a new chapter” had begun, with incomes policy (the Concerted Action) playing a large role in controlling inflation (*DW*, 06/23/71, *a.t.*).

This “new chapter” indeed featured distinct policies from 1970, including looser monetary policy. The dissipation of monetary restraint was evident in a 2-percentage-point decrease in the discount rate over calendar 1971, despite annual CPI inflation *rising* about 2 points during the year.²¹ The interest-rate cuts continued over the May-December 1971 interval, which the Bundesbank considered a floating-mark period (*BBAR*, 04/72, p. 18), so it is difficult to argue that these cuts reflected policymakers balancing inflation

²¹ See Figure 3 below.

control against exchange-rate stability. Rather, the belief that inflation could be solved by incomes policy implied that monetary policy was free to stimulate the seemingly weak economy. The overambitious aim of incomes policy had been foreshadowed in January 1971 by Bundesbank President Klasen, who had voiced the opinion that Concerted Action offered the prospect of moving from a situation where “[union] members judge the success of the trade union leadership on the success of the wage struggle,” to “a higher level” where “the performance should be judged on trade unions’ part in the general economic report of the Federal Government” (*DW*, 01/23/71, *a.t.*).

Finance Minister Schiller resigned in mid-1972 in protest against the Government’s adoption of exchange controls (Fels, 1977, p. 613). Since Schiller was arguing for a freer financial system, it would be tempting to conclude that his defeat was a further setback for orthodox macroeconomic policies.²² That would not, however, be an appropriate conclusion. In official deliberations in 1972, the alternatives taken most seriously were a fixed exchange rate with exchange controls, or Schiller’s favored option of a fixed rate with few controls. If monetary restraint was to commence under fixed exchange rates, Germany needed foreign exchange controls; and, indeed, German authorities were able to raise interest rates in late 1972, even before the Bretton Woods system broke down. From a monetary-control perspective, the reimposition of foreign exchange controls was desirable. The policy package involving foreign exchange controls was thus the lesser of two evils, even though less appropriate than the alternative, not-yet-on-the-table option of a permanent float, monetary restraint, and no exchange controls. Certainly it is hard to justify vocal opposition like Schiller’s to foreign exchange controls, which buy greater monetary policy independence at the expense of microeconomic efficiency, when this reaction is compared to the largely uncritical acceptance in Germany until well into the 1990s of such instruments as reserve requirements, which impose microeconomic inefficiency (i.e., a tax on banks) but do not deliver any meaningful increase in the capacity of monetary policy to influence aggregate demand.

Schiller’s departure was also desirable because it fostered a shift away from incomes policy as an anti-inflation weapon. In August 1972, shortly after assuming office as Finance Minister, Helmut Schmidt was asked to comment on the United States’ wage and price controls. His response was to cast doubt on their value: “I think a short-term

²² Especially as von Hagen (1999a, p. 683) casts Schilling’s resignation as a defeat for further tightening of fiscal policy.

success of the U.S. experiment is quite possible. But in the long run controls create serious distortions of market forces. You've got to grasp how wedded we are to the concept of free markets and free competition as a foundation of a productive economy. We consider the basically free play of prices on the market and the absolute independence of employer and employee in wage negotiations as vital to this process. I don't really think much of trying to interfere in this autonomous play of forces with such things as wage and price controls" (*NW*, 08/21/72). Schmidt's views stand in contrast to the enthusiastic, even utopian, prior statements by Schiller and Klasen to the effect that incomes policy opened up a new chapter in which unions' objective functions were transformed.

The late 1972 interest-rate increases were preemptive in the sense that they amounted to tightening while the output gap was still believed to be negative—the Bundesbank's report on 1972 gave it as -1.5% on average (*BBAR*, 04/73, p. 11). The 1972 tightening was in response to rapid money growth and the signal this gave of prospective overheating in 1973. Thus monetary policy in 1972 focused on monetary aggregates, but did so with a preemptive outlook regarding aggregate demand developments. There is therefore considerable continuity from late 1972 policy to the late 1974 policymaking described by Bernanke, Laubach, Mishkin, and Posen (1999, p. 47) which they regard as notable for preemption (though in the reverse direction to 1972—reducing interest rates ahead of the 1975 slowdown).

4.3 1973–75: New regime

The transfer of inflation control to monetary policy, already underpinning the 1972 discount-rate increases, was boosted further in early 1973, notably in a call by the Federal Government, documented by von Hagen (1999a, p. 683), for monetary policy to carry out disinflation. While von Hagen emphasizes that this preference for monetary policy reflected the executive's reluctance to tighten fiscal policy, for the present discussion two other, very important aspects of the Government's call are crucial that put it in a far more favorable and positive light. First, it was an authoritative affirmation that restricting aggregate demand was essential for reducing inflation. This contrasts with (e.g.) the United Kingdom and Ireland at the time, with their governments' belief that monetary stimulus actually reduced inflationary pressure. Secondly, a disinflationary monetary policy was acknowledged as compatible with lack of fiscal consolidation. This contrasts

with the position of Arthur Burns in the United States that fiscal deficits automatically pushed up money growth and/or inflation.

During the second quarter of 1973, the Bundesbank raised the discount rate in two steps to 7%. At a press conference following the first of these increases, Bundesbank President Klasen affirmed that the increase was designed to fight inflation. He did, however, indicate he might support a wage-price freeze if inflation deteriorated, adding that “we must use all other available measures” before contemplating that step (*JT*, 05/05/73).

A more firm rejection of controls as a solution to Germany’s inflation took place the following week, when the Brandt Government announced its own anti-inflationary measures, concentrating on fiscal restriction, and excluding wage and price controls (*SCMP*, 05/11/73).²³ Commenting on the measures, the “father” of Germany’s postwar currency, Ludwig Erhard, applauded the Government’s rejection of wage-price controls, but cast doubt on the importance of the package. Erhard emphasized the legitimate distinction between measures (of which fiscal tightening and reserve-requirement increases are good examples) that change the way money enters circulation but which still mean that “such money sooner or later gets back into circulation anyway,” and measures (such as the discount-rate increases) that tighten aggregate monetary conditions. Erhard affirmed that a restriction of the latter type, which reduced money growth, was the answer to Germany’s present inflation. He added, “I think perhaps we now should have another currency reform in miniature” (*JT*, 06/22/73).

In fact Germany as he spoke was undergoing a “currency reform in miniature”—in the form of the regime of a floating exchange rate and inflation-oriented monetary policy, started in 1973. It is usual to date Germany’s regime change to the introduction of monetary targeting in December 1974, a dating also implicit in the estimation of reaction functions using data beginning in 1975 at the earliest.²⁴ But money growth had been cited as a reason from the beginning of the Bundesbank’s tightening in October 1972 (*JT*, 10/08/72). By October 1973, Helmut Schlesinger, a Bundesbank director, was describing March 1973 as the date when “[m]onetary policy... moved back into the center of anti-cyclical policy” (*FT*, 10/08/73). And, indeed, the Bundesbank in 1975 described its 1974 strategy as “to continue the fight begun in 1973” (*BBAR*, 04/75, p. 14); and though

²³ Chancellor Brandt reaffirmed the rejection of controls in a television interview in February 1974: “Such steps have not proved to be effective. In our neighboring countries, such steps did not bring about any better results” (quoted in *JT*, 02/03/74).

²⁴ See, for example, Bernanke and Mihov (1997).

monetary targeting was not introduced until the end of 1974, a Bundesbank official testified in 1980 that the Bundesbank “for internal purposes had already established a target for its own orientation for the year 1974” (Dudler, 1980, p. 299).

Therefore, the regime in force from December 1974 was a formalization of that prevailing throughout 1974, itself in turn a continuation of the regime begun in March 1973. Indeed, most of the “heavy lifting” carried out during the regime—substantial interest-rate increases—had been done by the time monetary targeting was formally introduced, with the discount rate being cut from April 1974, annual CPI inflation having peaked (at 7.5%) in 1974 Q1.

What were the doctrinal changes underlying the regime change? As noted above, changes in personnel at the top of the Federal Government were one important element, with Finance Minister (from May 1974, Chancellor) Schmidt more inclined than his predecessor to focus on monetary policy and away from incomes policy.²⁵

As far as the Bundesbank is concerned, however, there is evidence that President Klasen, while supportive of tightening money in 1973, did *not* undergo a profound change in his views relative to 1971. At that time, he had subscribed to a mixed cost-push/monetary view of inflation, with his behavior from mid-1971 suggesting a move to a harder-line cost-push view, giving up on the idea that monetary actions could rein in wage inflation; further, as noted above, in mid-1973 he had withdrawn his 1971 opposition to compulsory wage and price controls (though the Government in the event did not adopt them). The monetary policy tightening in 1972–73 was compatible with this position as it was a reaction to a prospective positive output gap, and did not in itself signify a denial of the importance of cost-push factors. Even in June 1974 President Klasen described the monetary tightening as amounting to “[w]hat could be done by monetary policy” against inflation, with low inflation also requiring improved attitudes about sharing the economic “cake” (AB, 06/27/74). Klasen’s non-conversion to the monetary view of inflation was also reflected in the Bundesbank’s most authoritative statements, such as the 1972 *Annual Report* which said on its opening page: “monetary policy alone cannot avert the danger of inflationary expectations gaining strength” (BBAR, 04/73, p. 1).²⁶

²⁵ The Bundesbank’s Otmar Emminger subsequently acknowledged Schmidt’s arrival was a “shake-up... [of] great significance” (Emminger, 1977, p. 34).

²⁶ This quotation puts in perspective the statement in the same report that “persistent and accelerating decline in the value of money is impossible without a corresponding [monetary] expansion... [and] the monetary sphere in its own right not infrequently promotes the inflation of prices and wages” (BBAR, 04/73, p. 24). Bernanke, Laubach, Mishkin, and Posen (1999, p. 50) interpret this quotation as implying

A sharper change in attitude on inflation control occurred among other directors of the Bundesbank. Chief Economist Helmut Schlesinger was much more influenced by monetarism, citing “theoretical arguments and empirical findings produced largely in the U.S.” Schlesinger noted that a monetary approach to inflation control was “nothing new from the German point of view” (*FT*, 10/08/73), and Ludwig Erhard’s reaction to the 1973 inflation also attests to this; but the new research on the subject helped convince Schlesinger that German policymakers had been wrong to look to areas other than monetary policy for inflation control.

Bundesbank Vice-President Emminger, like Schlesinger, took a stronger view than President Klasen on the contribution that monetary policy could make. Emminger affirmed that the Bundesbank could deliver price stability, and spoke out against critics. “For example,” he observed in November 1973, “people say: ‘Anti-inflation policy, well and good; but in the cost of living there’s a large proportion of administrated prices which are insulated from market laws and thus from the overall instruments of fiscal and money policy.’ According to this argument, no matter how hard we try, we can never get below a given bedrock inflation rate determined by the administrated prices, let us say 5%.” Emminger rejected this “defeatism about the value of monetary policy.” The proportion of prices and wages that responded to market forces was large and, he noted, even administered prices ultimately responded to market forces (*AUP*, 11/09/73, *a.t.*).

It is therefore appropriate to conclude that the monetary regime that began in 1973 was influenced by the monetary view of inflation, but that President Klasen underwent a less significant change in opinion than his subordinates. To emphasize, this was not a difference among policymakers on the costs of inflation; Emminger and Schlesinger shared the goal of price stability with Klasen. Rather, it amounted to a different perception of what had created price stability before 1970 and what had changed since 1970. Klasen was more concerned with reinforcing specific institutional arrangements that had existed before 1970 such as Concerted Action, believing the need for incomes

that “monetarism was having a significant impact on policymaking inside the Bundesbank.” This conclusion is accurate—see the October 1973 quote from Helmut Schlesinger given below—but does not follow from the quotation, which is a weaker statement than what is implied by a monetary view of inflation. To say that “accelerating” inflation requires monetary accommodation, and that monetary expansion “not infrequently” promotes inflation, could simply be acknowledging that monetary expansion can create excessive demand and compound cost-push inflation. Unlike later statements by the Bundesbank, quoted below, this statement does not reject the possibility that cost-push forces can be a source of maintained inflation, nor does it acknowledge that monetary restraint is a sufficient condition for price stability.

policy to have become more important in the 1970s. Emminger and Schlesinger had far less attachment to the pre-1970 institutional arrangements, be they Concerted Action or fixed exchange rates. Their reasoning was that these features were peripheral to the truly important element that had been lost since 1970, namely monetary stability. They saw no merit in fixed exchange rates *per se*, notwithstanding fixed rates being a feature of the earlier price stability period; monetary stability could be delivered by domestic monetary restraint combined with floating exchange rates. Klasen thought monetary restraint was one condition for price stability; Schlesinger and Emminger thought it was a necessary and sufficient condition.²⁷

In 1973, however, with unanimity that excess demand was the immediate problem, doctrinal disagreements were less likely to manifest themselves as policy disagreements. This unanimity, and the solidarity between the Government and the Bundesbank on the 1973 policy change, proved important, as the new course was criticized by many leading financial commentators. Jürgen Ponto, president of Dresdner Bank (the Federal Republic's second-largest commercial bank), said in November 1973: "The doubts whether a lasting stabilization of cost and prices can be achieved by holding fast to the current restrictive credit and fiscal policy course are being only reinforced." Ponto claimed that interest-rate increases were having a cost-push effect "rather than the desired anti-inflationary effect" (*JC*, 11/05/73). *The Economist*, too, was extraordinarily critical. In June 1973 it asserted: "chances for an early dip in cost-push inflation therefore look slim... [T]ight money... will merely turn boomflation into stagflation" (*TE*, 06/09/73). In November it editorialized: "The right economic recipe is re-expansion and an incomes policy," and judged that the Government's rejection of controls and its embrace of demand restraint "could hardly be a worse policy for Germany at this time" (*TE*, 11/10/73).

4.4 1975–80: Consolidating the new regime

In the second half of the 1970s, the regime change was consolidated by data outcomes—low inflation—and personnel changes—notably the accession (in 1977) of Otmar Emminger to the Bundesbank presidency. An interview Emminger gave in early 1975,

²⁷ This conjecture about Emminger and Schlesinger's 1973 positions is compatible with their later reputation as dissenters in post-1974 Bundesbank deliberations, indicated using internal material by von Hagen (1999a, p. 690). Indirect support for associating Klasen with the nonmonetary approach to inflation rather than the monetary targeting regime is also provided by the fact that neither von Hagen's (1999a) nor Bernanke, Laubach, Mishkin, and Posen's (1999) account of Bundesbank monetary targeting mentions Klasen, despite monetary targeting being inaugurated during his presidency.

while still Bundesbank Vice-President, was notable for his emphasis on aggregate demand control. He stressed that Germany had gotten “inflation under control... [by] apply[ing] the classical medicine of restrictive fiscal and monetary policy.” Asked if Germany’s monetary policy solution could be applied to the United Kingdom, Emminger expressed the reservation that “[w]hen you already have very high and firmly established inflationary expectations, it is difficult to break them with restrictive fiscal and monetary policy alone” (*TG*, 03/05/75). This way of phrasing the issue was probably a diplomatic means of avoiding direct criticism of U.K. policymakers; Emminger was being interviewed by a British newspaper. It is uncontroversial, according to a monetary view of inflation, that monetary policy might not reduce inflationary *expectations* at the same speed that it removes inflationary pressure.²⁸ This does not prevent monetary policy from reducing inflation, but increases the short-term output costs of a disinflation. Incomes policy is sometimes invoked as helpful in these circumstances, by providing a direct link between nominal contract arrangements and the government’s disinflation program. The problem with using this as a defense of incomes policies pursued by countries like the U.K. in the 1970s is that incomes policy was there seen as an anti-inflation policy in itself, a view Emminger rejected: “it is nearly impossible to break established inflation by relying on incomes policy alone” (*TG*, 03/05/75).

Later in 1975, Emminger was even more outspoken against nonmonetary approaches to inflation control. Emminger referred to the “baffling complexities” of incomes policies, and went on:

[W]hatever the initial causes of a particular price inflation—they may be entirely exogenous like bad harvests, the oil price increase, etc.—in the longer run price inflation can continue only if it is accommodated by permissive monetary policies. Inflation is a monetary phenomenon. Thus the responsibility of the central banker is always involved. (*AUP*, 12/19/75).

Similarly, in 1977 the Bundesbank’s Helmut Schlesinger said: “In the medium run, general price increases cannot occur without excessive expansion of the money stock” (*AUP*, 10/11/77). This firmness contrasts with positions of other countries’ policymakers at the time, not only elsewhere in Europe but also in the United States. Federal Reserve

²⁸ That monetary policy can ultimately—whatever short-run inertia exists in inflationary expectations—pin down those expectations fully by keeping the expected output gap path at zero, distinguishes the monetary view of inflation.

Chairman Burns, for example, said he was confident that monetary policy could prevent inflation only “if private enterprise doesn’t go wild and if Congress stops legislating inflation,”²⁹—so that in contrast to the Bundesbank orthodoxy, monetary restraint in Burns’ view was only one of many conditions for inflation control.

Several practical features of the new monetary regime emerged.³⁰ First, the Bundesbank did not accommodate the 1973–74 oil shock. President Klasen said in 1974 that it “would be wrong to inhibit indispensable adjustment processes by artificially enlarging aggregate demand” (*AB*, 06/27/74), while in the December 1975 quotation above Emminger stated the non-accommodation principle. Quarterly inflation peaked at end-1973 and annual inflation in 1974 Q1, well ahead of the peaks in other countries. For Germany, the peak reflected a one-time price-level jump from the OPEC shock, as well as pre-1973 monetary ease, and did not reflect accommodation of the oil shock.³¹

Secondly, while focusing on money growth, the authorities did not discard evidence from real variables; as noted above, Bundesbank director Schlesinger had in 1973 described the new policy as “anti-cyclical,” while the Bundesbank’s annual reports in the 1970s and into the 1980s plotted estimates of potential output (e.g. *BBAR*, 04/81, p. 11).³² The attention to the output gap in policymaking did not contradict the reaffirmed orientation of monetary policy on inflation control. But it did raise the possibility that output gap mismeasurement, occurring especially with the post-1973 economic slowdown, would provoke inappropriate monetary easings, as Orphanides (2003) argues occurred in the 1970s in the United States. The Bundesbank partially avoided this problem by promptly recognizing some of the post-1973 slowdown. Emminger said in 1975 that policymakers “definitely” expected permanently lower economic growth because of slower growth in the labor force and other structural changes (*TG*, 03/05/75) as well as “a somewhat higher level of unemployment than we have been used to since the 1960s” (*CAP*, 02/75, *a.t.*).

²⁹ Arthur Burns, November 9, 1977 testimony, in Committee on Banking, Housing, and Urban Affairs (1977, p. 26).

³⁰ Tactical features of the regime, i.e. the operating procedures used by the Bundesbank in the financial markets, are not discussed here due to my focus on strategy. Bernanke, Laubach, Mishkin, and Posen (1999), Issing (1997), and von Hagen (1999a) provide extensive discussions of Bundesbank operating procedures.

³¹ The suggestion by Clarida and Gertler (1997, p. 375) that the Bundesbank heavily accommodated the first oil shock does not therefore seem to be warranted.

³² von Hagen (1999b, p. 434) and Gerberding, Worms, and Seitz (2005) also indicate that countercyclical considerations weighed heavily in the Bundesbank’s internal deliberations.

Thirdly, German policymakers, like their Japanese counterparts, had “speed-limit” concerns about inflationary pressure. For example, in December 1975 Emminger observed that “an economy may run into bottlenecks long before reaching full employment” (*AUP*, 12/19/75, p. 3), a position he reaffirmed in 1978 (*AUP*, 02/03/78). Consistent with this concern, Bundesbank director Schlesinger gave “current utilization of the production potential, and possible changes in this utilization” as factors that entered each year’s money growth target (*AUP*, 10/11/77, p. 3). Of these, the change in utilization evidently came to have the more systematic effect on policy decisions, at least after 1978: for the 20 years beginning in 1979 Q1, Gerberding, Worms, and Seitz (2005) find that responses to the output gap in the Bundesbank’s policy rule are small and statistically insignificant, while those to gap growth are significant. Mismeasurement of the level of the output gap was substantial in Germany in the second half of the 1970s, as they show, so the basing of policy on output gap growth was beneficial. The official statements cited above on the link between bottlenecks and inflation suggest that the Bundesbank’s focus on output-gap growth did not arise from skepticism about the level estimates, but from belief in a speed-limit term in the Phillips curve.³³

Fourthly, incomes policy did not play a part in the disinflation. As discussed in the introduction, advocates of incomes policy outside Germany attributed German inflation success to union-government cooperation regarding nominal wage growth. Such accounts have no merit. The consultation body, Concerted Action, which had been cited as an anti-inflationary tool during the heyday of cost-push views in Germany, was disbanded in 1977 (Braun, 1986, p. 240). A Bundesbank official explained in 1980 that the authorities “gave up” on Concerted Action, and that “I do not think that we or the trade unions felt that this was a very important arrangement as far as actual policymaking is concerned” (Dudler, 1980, p. 305). On the more general question of incomes policies, the Bundesbank stated: “The Bundesbank and Federal Government have never regarded administrative wage and price controls as an alternative (or supplement) to monetary policy... The Government neither intervenes directly in specific wage and price decisions nor attempts to hold trade unions or employers’ associations to formal wage and price

³³ Equally, by rationalizing the short-run coexistence of negative output gaps and inflation, the speed-limit perspective on Phillips-curve dynamics probably slowed down German policymakers’ revision of their output gap estimates to more accurate values.

guidelines... [T]here is practically no convincing evidence of the lasting success of any variant of direct income[s] policy” (Deutsche Bundesbank, 1980, p. 295).³⁴

Fifthly, the Bundesbank did concede an influence on cost-push pressures on inflation in their published estimates of the amount of “unavoidable” inflation in the year ahead. This concept encompassed not only the inflationary pressure built in by prior monetary policy decisions, but also price-level shocks that were conceded as having an impact effect on inflation. A Bundesbank official in 1980 gave “higher raw material prices or oil prices” as influences on the unavoidable inflation rate (Dudler, 1980, p. 299). The impact of such factors on inflation is, however, compatible with the monetary view of inflation since that view holds that it is expected future inflation that is pinned down by monetary policy alone—and is consistent with the Bundesbank’s repeated emphasis (documented above) on the role of monetary accommodation in making a shift in the inflation rate permanent. In addition, the fact that the official inflation forecast announced each year tended to decline, settling at 2% after 1985,³⁵ shows that even the “unavoidable” component of inflation was regarded as an endogenous variable at horizons beyond the short run.

It is likely, however, that the Bundesbank overestimated the importance of cost-push factors in the determination of unavoidable inflation. For example, in 1978 the Bundesbank believed, in the words of one official, that the mark was “faced with the prospect of an uncontrolled appreciation” (Dudler, 1980, p. 306), and undertook unsterilized intervention to offset some of the upward pressure.³⁶ This was despite the fact that over this period, President Emminger gave “one to three percent” as the only inflation rate that the Bundesbank considered tolerable (*BKR*, 09/78). It is clear that the Bundesbank thought it could get away with monetary stimulus in 1978 despite its monetary view of inflation because it believed that the negative impact effect on inflation from mark appreciation would offset the upward pressure coming from the monetary easing. Indeed, in 1980 a Bundesbank spokesman was very open about this, revealing the authorities had “felt that pursuing a low interest-rate policy and allowing monetary growth to accelerate would not have a detrimental effect” on inflation (Dudler, 1980, pp. 306–307). In the event, this proved not to be the case, as annual CPI inflation exceeded

³⁴ Similarly, a description by Germany’s Federal Government of economic policy said: “wage freezes or the fixing or limiting of wage increases are not included amongst the instruments employed in evolving the State’s economic policy” (quoted in *UKPD*, 11/09/78, p. 1218).

³⁵ See Coenen and Levin (2004) and Gerberding, Worms, and Seitz (2005).

³⁶ See von Hagen (1999a, p. 693) for other details of this episode based on different sources.

5% in 1980, a rate above what the Bundesbank regarded as acceptable even in the face of the second oil shock.³⁷ An alternative policy in 1978, which disregarded the nonmonetary influences on inflation, would have led to this error being avoided. The misjudgments underlying the 1978 episode probably played a part in leading Karl-Otto Pöhl, who became Bundesbank President in 1980, to state: “Interest rates should be set according to domestic monetary conditions and the exchange rate should be left to go where it will.”³⁸

5. Lessons from the Great Inflation in Japan and Germany

The preceding sections have already discussed some lessons regarding 1970s policymaking in Japan and Germany. In particular, both countries switched from a problematic nonmonetary approach to inflation control in 1971–72 to a monetary approach to inflation control from 1973; in both cases, confidence in monetary policy was hardened by falling inflation in 1975; and the particular variables policymakers focused on in measuring excess demand, namely money growth and the change in the output gap, enhanced preemptiveness of policy and reduced the influence of estimated output gap levels on policymaking. I now focus on two other lessons about policymaking and inflation behavior that emerge from joint study of the two countries.

5.1 Phillips curve trade-offs weren’t important in policymaking

A belief in a long-run Phillips curve trade-off was not the source of Germany’s 1970s inflation problems. The essentials of the long-run vertical Phillips curve view had been voiced officially in Germany in 1970, by Finance Minister Schiller, who shared his predecessors goal of price stability.³⁹ Moreover, in 1975 Bundesbank President Klasen said it was “wrong” to believe in “a long-lasting solution to unemployment through more inflation” (*NW*, 02/17/75). Where policymakers—notably Schiller and Klasen—lapsed in the 1970s, it was in succumbing to cost-push views, not trade-off pursuits.

Their lapse also indicates that denying a long-run Phillips curve trade-off is not enough. A sound official doctrine needs also to be subtle by taking care not to reject all aspects of Phillips curve analysis. From the perspective of modern macroeconomics, the

³⁷A spokesman for the Bundesbank said in 1980, “We certainly would feel that a rate of 5% is too high... for what we might accept as an unavoidable structural built-in inflation element” (Dudler, 1980, p. 301).

³⁸ Quoted in Thatcher (1995, p. 479).

³⁹ As former Chancellor Erhard put it, “I am convinced the maximum rate of price increases should be 2 percent—but 1 percent is preferable. Herr Schiller wants that too” (quoted in *KCS*, 07/01/70).

phenomenon of stagflation reflects the impact on inflation dynamics of two terms that appear in a correctly specified Phillips curve: expected inflation and shocks to potential output. But 1970s policymakers could be—and indeed were, especially outside Germany—tempted to interpret stagflation as instead revealing that *no* relationship existed between unemployment (and so the output gap) and inflation, or that the relationship was positive under all circumstances. Such misinterpretations, while successful in leading policymakers away from attempting to exploit trade-offs, are unhelpful because they obscure the fact that the way to remove inflation is to work on the aggregate demand channel. It is not therefore a badge of honor to be so hawkish about inflation as to believe that inflation has only a positive relationship with unemployment. This variant of hawkishness obscures the mechanisms connecting monetary policy actions to inflation, so is not really a road to a low inflation regime.

In this light, a notable contribution by Helmut Schmidt to economic policymaking, in addition to transferring inflation control to monetary policy, was to restore a balanced view of the unemployment/inflation relationship. Schmidt voiced a subtle interpretation, stating that the message of the data was “that the correlation between unemployment and inflation is different, but that there is a fundamental connection” (*DZ*, 11/08/74, *a.t.*), and that it was “too simple to say that inflation causes unemployment” (*SZ*, 06/24/75, *a.t.*). Schmidt’s call for subtlety, in fact, matched the attitude of Milton Friedman, who wrote in 1979: “Orthodox wisdom has it that unemployment is a cure for inflation. A minority has it that unemployment causes inflation. Both views are half-truths” (*NW*, 11/12/79).

In Japan there was also a shifting interpretation of the unemployment/inflation relationship, and at no point was belief in a long-run trade-off the official view. In February 1970, Finance Minister Fukuda gave Japan’s unavoidable inflation rate as 4–5% (*JT*, 02/20/70), with the Government stating that “to maintain our economic growth, some degree of price increase is inevitable” (*JT*, 03/03/70). This was not, however, based on a Phillips trade-off calculation; the Phillips trade-off implies that higher inflation can buy a higher *level* of output, whereas the Government’s statement referred to the inevitability that moderate inflation would coexist with steady-state economic *growth*.

It is likely that the Government was not simply stating that reducing inflation below 4% would require a temporary disruption of growth. Rather, its references to 4–5% inflation as unavoidable or inevitable probably indicated a view that superneutrality violations

(e.g., “wheel-greasing” effects of inflation) existed that made 4–5% inflation rates (approximately those observed in the 1960s) conducive to continuation of Japan’s 1960s economic growth.⁴⁰ Certainly higher inflation rates were ruled out: even in 1970, the Government regarded bringing inflation back below 5% a desirable immediate goal, and reduction to 3–4% as a long-term goal (*JT*, 02/20/70; 03/03/70). The subsequent 20-point rise in Japan’s inflation rate cannot plausibly be attributed to government exploitation of a trade-off calculation: in 1970 the Government wanted to bring inflation back below 5%, while in 1971–72 it had nonmonetary (and therefore non-Phillips curve) views of the inflation process. After 1973, Japanese policymakers indicated that they viewed inflation dynamics in terms of a conventional, long-run-vertical, Phillips curve.⁴¹

5.2 Cost-push shocks weren’t important for inflation

The cost-push or nonmonetary view of inflation denies that monetary accommodation is required for cost-push shocks to have a lasting effect on inflation. Advocates of this view suggest that incomes policies that intervene directly in wage and price setting could directly remove inflationary pressure. Germany and Japan’s experiences point to the lack of validity of this position. Earlier evidence for Japan was discussed above, in particular the implausibility that incomes policy played a role in its success (see Section 3.5), and I now focus on a test of wage-push as a source of ongoing inflation in Germany.

As a preliminary step, it is worthwhile considering Coenen and Levin (2004) who model German inflation developments from 1975 to 1998. In their model, prices are set in a staggered Taylor (1980) fashion as a function of nominal unit labor costs; and after rearrangement, the dependent variable in the price-contracts equation is inflation, and the forcing process is the labor share. Figure 4 plots the labor share series used by Coenen and Levin, but covering the years of interest to this paper, not just their post-1974 sample. Coenen and Levin do not use this series in estimation, instead employing a detrended version that excludes the post-1974 trend. The underlying modeling reason for this is that dynamic stochastic general equilibrium models generally predict a constant steady-

⁴⁰ For example, an empirical regularity of the 1960s was that Japan’s wholesale price index was stable even as the CPI rose (Komiya and Suzuki, 1977, p. 306). It may have been thought that the resulting relative-price pattern was one condition for Japan’s steady-state growth, and might be disturbed if CPI inflation proceeded at zero or very low rates.

⁴¹ The particular favored variant of the Phillips curve in policy circles was one with stickiness in prices and flexibility in nominal wages (e.g. Suzuki, 1985). Ball (1994, p. 174) and Taylor (1989, pp. 137–142) likewise suggest that nominal wage flexibility may be a reasonable approximation for Japan.

state labor share, so that if a trend exists in the data, the models presumably should be interpreted as referring to deviations around that trend. It is nevertheless notable that Coenen and Levin do not attempt to treat the trend in the labor share as producing a trend in the inflation rate. On the contrary, German inflation has no downward trend after the mid-1980s, but the labor share continues to decline.

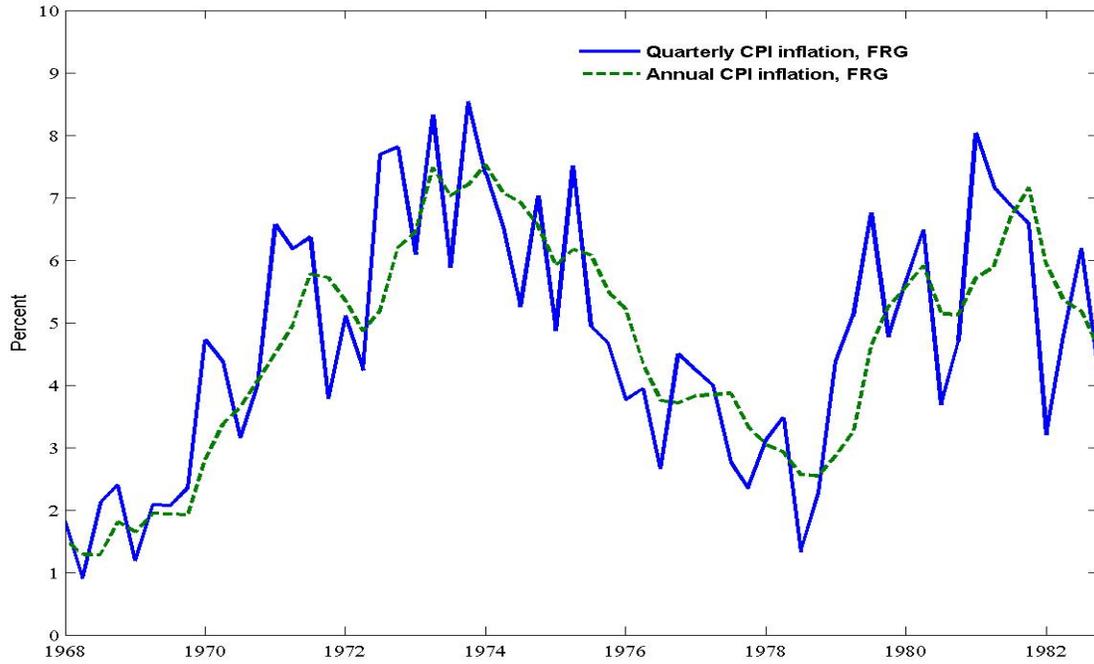
Though it is not a point that Coenen and Levin pursue, it is worth emphasizing how much this combination of labor share/inflation trends amounts to a rebuttal of the cost-push—and particularly the wage-push—view of inflation. The combination has implications for the validity of incomes policies. If unit wage costs have a trend and the inflation rate shrugs off this trend and is instead pinned down by monetary policy, then it is established that the two series can move independently of one another even for long periods. The case for incomes policy as an anti-inflation measure is therefore weak *even if* one believes wage-push is a potentially important component of nominal wage growth. Monetary policy evidently only needs to affect a portion of unit costs to keep inflation on target; equally, long-lasting disturbances to unit costs need not disturb inflation control.

An advocate of incomes policies might argue that the different trend pattern of costs and inflation is not relevant evidence on the importance of cost-push shocks for inflation; perhaps, cost-push shocks produce shifts in the detrended portion of unit costs and so in the portion of costs most relevant for inflation. But the 1970s German experience also provides evidence against even this weaker argument for the importance of cost-push factors. The 1971 “wage explosion,” which, as shown above, was cited by German policymakers as an important cost-push episode, provides a natural experiment.⁴² Monetary policy was tight in 1970 and into 1971, so insofar as there was a wage-push event in 1971, any reaction of inflation did not reflect monetary accommodation.⁴³ The period therefore serves as a useful experiment to determine whether, as claimed in nonmonetary accounts of inflation, autonomous wage shifts imply ongoing price inflation even if not accommodated.

⁴² Franz and Gordon (1993, pp. 739–740) refer to the “1970–1971 ‘wage explosion.’” But of the two years 1970 and 1971, only 1971 provides an experiment for determining the importance of an alleged cost-push event. As we have seen, 1970 was a period of acknowledged excess demand in Germany, disqualifying it as a year in which inflation was purely cost-push.

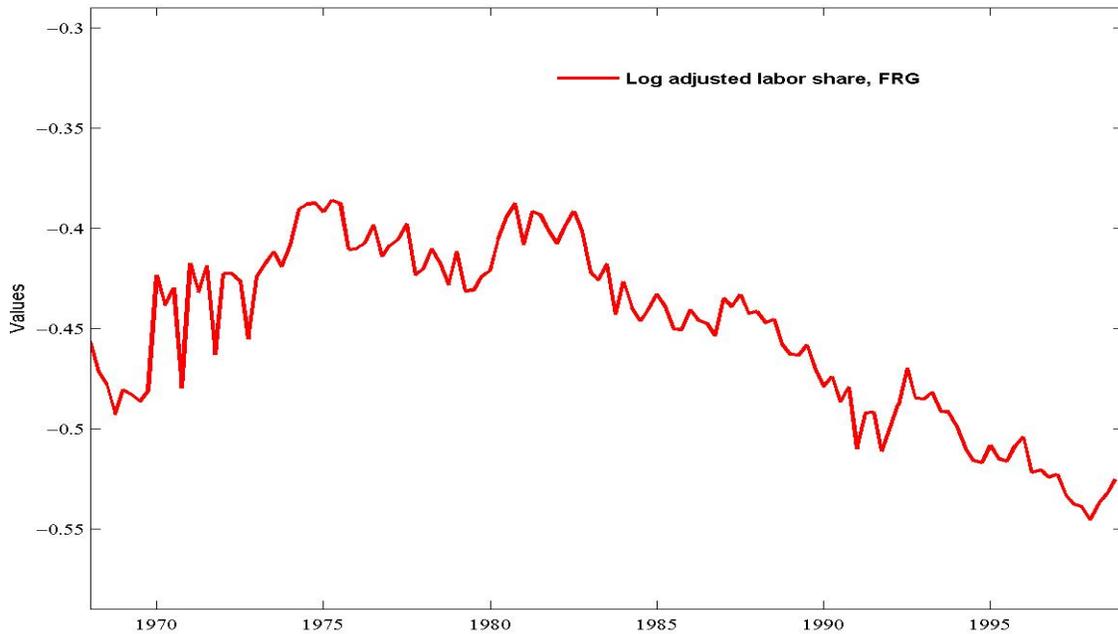
⁴³ With delays from monetary policy actions to inflation, the easier money period from April 1971 likely occurred too late to affect 1971 inflation outcomes appreciably.

Figure 3. CPI inflation in the Federal Republic of Germany



Note: Calculated from Haver-OECD data

Figure 4. Labor share in the Federal Republic of Germany



Note: Calculated from Bundesbank data

To determine the impact of the 1971 events, I augment an AR(1) representation of German inflation for 1970 Q1–1989 Q4 with dummy variables for each quarter of 1971. The results are given in Table 1. There is a positive coefficient on the 1971 Q1 dummy with about 10% statistical significance, but for the whole of 1971 the dummies’ sum is considerably smaller and is not at all statistically significant. This is consistent with the message of the monetary view of inflation that cost-push shocks wash out of the inflation rate over time if not accommodated.⁴⁴ In the present instance, the reduced-form evidence of Table 1 suggests that the wage-push event led to an initial mild spike in prices and in inflation, but that lack of accommodation led to compensating downward pressure on prices later in the year, leading to no net effect of the cost-push shock on inflation.⁴⁵

Table 1. AR(1) for German inflation augmented by dummies for 1971 Sample period 1970 Q1–1989 Q4						
Estimated coefficient on:						
Constant	Lagged inflation	1971 Q1 dummy	1971 Q2 dummy	1971 Q3 dummy	1971 Q4 dummy	Sum of coefficients on 1971 dummies
0.009 (0.003)	0.759 (0.075)	0.026 (0.016)	0.003 (0.016)	0.007 (0.016)	-0.020 (0.016)	0.016 (0.033) [<i>p</i> value = 0.626]
Note: Standard errors in parentheses. Dependent variable is quarterly annualized CPI inflation rate, Federal Republic of Germany (computed from West German seasonally adjusted CPI in Haver-OECD). Dummy variables are equal to 1.0 in the indicated quarter, zero otherwise.						

6. Conclusions

Many theories about why countries inflate take for granted that policymakers understand that inflation is a monetary phenomenon. The evidence in this paper suggests that these theories do not have merit for understanding Germany and Japan’s 1970s experience. Indeed, two particular factors often cited as important in accounting for inflation outcomes—government pressure on central banks to inflate, and policymakers’ belief in a long-run unemployment/inflation trade-off—do not appear important in understanding

⁴⁴ See e.g. Friedman (1990, pp. 13–16) or DeLong (1997, p. 268).

⁴⁵ The New Keynesian Phillips curve version of equation (1) together with a monetary view of inflation implies that a positive cost-push shock washes completely of the inflation rate within a quarter. Table 1 suggests instead that the shock washes out within about a year. Prices in Germany therefore seem somewhat stickier than what is implied by the pure New Keynesian Phillips curve—a result consistent with Coenen and Levin’s (2004) use of Taylor contracts to model inflation—but the basic message of the monetary view of inflation is confirmed.

these countries inflation-disinflation pattern. The suggestion that central bank independence is an important factor in delivering low inflation for these countries is belied by these countries' experiences. Japan's central bank was not independent, yet Japan disinflated early; and in Germany's case, pressure for disinflation came from Finance Minister Helmut Schmidt who, despite the Bundesbank's official independence, played a major role in retrieving order in monetary arrangements after the shambles of the 1971–72 period. The argument that policymaker belief in a long-run trade-off, and subsequent acceptance of no long-run trade-off, drove monetary policy developments is also not supported for either country.

What appears necessary for a successful explanation for the Great Inflation across countries is an account that does not take for granted policymakers' understanding of the monetary character of inflation. The monetary policy neglect hypothesis suggests that high inflation episodes in the 1970s reflect neither conscious acceptance of inflationary policies by governments, nor denial by policymakers of the costs of inflation. The analysis of Germany and Japan in this paper suggests that this hypothesis is useful for understanding their early embrace of disinflation. The German and Japanese experiences in the 1970s indicate that once inflation is accepted by policymakers as a monetary phenomenon, the main obstacle to price stability has been overcome.

Appendix A. Abbreviations for periodicals cited in text

AB—*American Banker* (USA); *AUP*—*Auszüge aus Presseartikeln* (Deutsche Bundesbank, Frankfurt); *AZR*—*Arizona Republic* (Phoenix, Arizona); *BBAR*—*Report of the Deutsche Bundesbank* (Annual Report) (Frankfurt); *BKR*—*The Banker* (London); *CAP*—*Capital* (Germany); *DT*—*Daily Telegraph* (London); *DS*—*Der Spiegel* (Hamburg); *DW*—*Die Welt* (Hamburg); *DZ*—*Die Zeit* (Hamburg); *FAZ*—*Frankfurter Allgemeine Zeitung* (Frankfurt am Main); *IP*—*Irish Press* (Dublin); *JC*—*Journal of Commerce* (Newark, New Jersey); *JT*—*Japan Times* (Tokyo); *KCS*—*Kansas City Star* (Kansas City, Missouri); *KYO*—*Kyodo News Wire Service* (Tokyo); *NKS*—*Nihon Keizai Shimbun* (Tokyo); *NW*—*Newsweek* (U.S. and Europe); *NYT*—*New York Times*; *SCMP*—*South China Morning Post* (Hong Kong); *STR*—*Straits Times* (Singapore); *SZ*—*Süddeutsche Zeitung* (Munich); *TG*—*The Guardian* (London); *UKPD*—*U.K. Parliamentary Debates: House of Commons* (London); *WSJ*—*Wall Street Journal* (New York).

Appendix B. Periodical articles cited on Great Inflation in Japan and Germany

I. Japan

“Ansprache des japanischen Finanzministers Takeo Fukuda” (excerpts from speech at World Bank, September 30, 1969), *Auszüge aus Presseartikeln*, October 7, 1969, pages 12–13.

“Text of Sato’s Policy Speech,” *Japan Times*, December 2, 1969, page 12.

Editorial, “Nikkeiren’s Wage Proposal,” *Japan Times*, February 1, 1970, page 12.

“Fukuda Says 4–5% Rise in Prices Inevitable,” *Japan Times*, February 20, 1970, pages 1 and 5.

Editorial, “Your Yen’s Worth,” *Japan Times*, March 3, 1970, page 12.

Sylvia Porter, “Japanese Worker Saving-est in World,” *Arizona Republic*, May 13, 1970, page F8.

Kyodo Service, “Incomes Policy Gets Debated at Seminar,” *Japan Times*, July 10, 1970, page 10.

“Bank of Japan Reduces Official Discount Rate by 0.25% to 6%: Policy Body Thinks Tight Money Has Achieved Purpose,” *Japan Times*, October 28, 1970, pages 1 and 5.

“Consumer Prices Rising: EPA Warns Against Large Wage Hikes,” *Japan Times*, December 5, 1970, page 13.

“Government Freezes Most Public Charges for Indefinite Period,” *Japan Times*, December 10, 1970, pages 1 and 5.

“Japan May Adopt ‘Incomes’ Policy,” *South China Morning Post*, December 12, 1970, Business News, page I.

“Revaluation of Yen Dismissed by Sasaki,” *Japan Times*, March 11, 1971, page 14.

Editorial, “An Economy in Transition,” *Japan Times*, January 4, 1972, page 14.

Editorial, “The Fiscal 1972 Budget,” *Japan Times*, January 14, 1972, page 14.

Sumio Hara, “World Economy Sluggish But Prospects Improving; Nixon’s Plan, Surtax, Revaluation Hit Japan Hard,” *Japan Times*, May 31, 1972, page 11.

“Credit Squeeze Likely in Bid to Curb Inflation,” *Japan Times*, December 25, 1972, page 12.

“Economy Overheated, Bank of Japan Says,” *Japan Times*, February 8, 1973, page 11.

“Tight Money Policy,” *Nihon Keizai Shimbun*, April 11, 1973 (translation in *Japan Times*, April 12, 1973, page 14).

“Govt. Plans to Expand Import Quotas by 30% Over Levels for 1972,” *Japan Times*, April 14, 1973, pages 1 and 5.

“Govt. Ministers Agree on Need to Stabilize Prices,” *Japan Times*, May 26, 1973, page 1.

“Tight Money Steps Viewed Sceptically,” *Japan Times*, May 30, 1973, page 10.

Editorial, “Discount Rate Raise,” *Nihon Keizai Shimbun*, May 30, 1973 (translation in *Japan Times*, May 31, 1973, page 14).

“Premier Feels Govt. Tight Money Policy Will Curb Inflation,” *Japan Times*, July 6, 1973, pages 1 and 5.

“Tight Money Policy to Continue: Premier,” *Japan Times*, November 2, 1973, page 12.

“Premier Rules Out Need for Incomes Policy,” *Japan Times*, December 9, 1973, pages 1 and 3.

“Govt. Forecasts GNP Rise of 2.5% for 1974, Lowest in 20 Years,” *Japan Times*, December 22, 1973a, pages 1 and 3.

“Bank Rate Raised by 2% to Reach Record 9%,” *Japan Times*, December 22, 1973*b*, page 1.

Editorial, “Changed Economic Fortunes,” *Japan Times*, December 30, 1973, page 8.

“Japanese Budget: Austerity, Gift-Wrapped,” *The Economist*, January 5, 1974, page 72.

“Tanaka Requests Labor to Show Restraint in New Wage Raise Bid,” *Japan Times*, February 22, 1974, pages 1 and 4.

“Japan Will Slow Down Growth Rate: Fukuda,” *Japan Times*, May 10, 1974, page 8.

Richard Halloran, “Japan’s Economy in a Deep Slump,” *New York Times*, June 12, 1974, pages 61 and 67.

“Noted Economist Says: Wage Increases Will Help Push Up Prices,” *Japan Times*, June 21, 1974, page 9.

“Ohira Pledges Efforts to Gain Price Stability,” *Japan Times*, August 3, 1974, page 1.

“Japan Plans Controls to Fight Price Rises,” *South China Morning Post*, October 8, 1974, page B2.

“15% ‘Limit’ to Price Increases Agreed On,” *Japan Times*, October 12, 1974, page 1.

Editorial, “Priority to Inflation Fight,” *Japan Times*, October 23, 1974, page 12.

“Tight Govt. Budget for 1975 Foreseen,” *Japan Times*, October 29, 1974, page 9.

“Fukuda Urges Labor to Help End Inflation,” *Japan Times*, December 19, 1974, page 8.

“Govt. Will Keep Tight Money Policy: Fukuda,” *Japan Times*, January 18, 1975, page 9.

“Prime Minister Miki’s Policy Speech,” *Japan Times*, January 25, 1975, page 12.

Steve Wilson, “Anti-Inflation Drive Slowing Down Japan’s Price Hikes,” *Straits Times*, January 29, 1975.

“Discount Rate Cut,” *Nihon Keizai Shimbun*, April 16, 1975 (translated in *Japan Times*, April 17, 1975, page 12).

Kentaro Koshihara, “Business Pressing for Bigger Cut,” *Japan Times*, April 21, 1975, page 11.

Soichi Yokoyama, "Inflation, Growth Slow Up as 1973 Policies Take Hold," *Japan Times*, May 31, 1975, page 10.

"Another Bank Rate Cut Urged by Fukuda," *Japan Times*, June 9, 1975, page 9.

"Must Beat Inflation in Order to Cure Economy: White Paper," *Japan Times*, August 9, 1975, page 1.

Editorial, "Recovery Without Inflation," *Japan Times*, August 14, 1975, page 12.

Reuter, "Japan Pulling Out of Serious Recession, Reports Govt. Agency," *Straits Times*, August 19, 1975, page 11.

"Tokyo Inflation Rate Finally Brought Down to Single Digit," *Japan Times*, November 29, 1975, page 1.

Kentaro Koshihara, "Prices Slowdown Triumph for Fukuda," *Japan Times*, March 29, 1976, page 5.

Editorial, "A Mini-Recovery Program," *Japan Times*, November 15, 1976, page 12.

"January CPI Jumps by 1.1%; Imperils Anti-Inflation Goal," *Japan Times*, January 29, 1977, page 1.

Editorial, "Recovery with Less Inflation," *Japan Times*, April 28, 1977, page 12.

"Nationwide Consumer Price Increase Hit 9.4% for 1976," *Japan Times*, April 29, 1977, page 1.

Editorial, "The New Reflation Program," *Japan Times*, September 8, 1977, page 16.

"Ohira Pushes for 7% Growth Rate in Debate," *Japan Times*, January 22, 1978, page 3.

"Bank of Japan Lowers Official Discount Rate to Record 3.5%," *Japan Times*, March 16, 1978, page 1.

"Bank Interest, at 5.9%, Lowest Since WWII," *Japan Times*, June 23, 1978, page 5.

Editorial, "Prices, Yen, and Consumers," *Japan Times*, July 26, 1978, page 12.

Milton Friedman, "Japan and Inflation," *Newsweek* (U.S. edition), September 4, 1978, page 75.

Takeo Takahashi, "High-Growth Structure of the Past Must Be Changed to Solve Problems," *Japan Times*, October 6, 1978, page 5.

Kentaro Koshihara, "Economy Scarred by Oil, Yen Shocks," *Japan Times*, October 16, 1978, page 4.

Associated Press, "Bank of Japan Chief Asks Curb on Money Supply," *New York Times*, December 28, 1978, page D3.

Editorial, "A Fitting Reply to Inflation Threat," *Japan Times*, April 18, 1979, page 12.

Kyodo Service, "Credit Policy Unlikely to Affect Inflation," wire commentary, May 23, 1979 (reprinted by U.S. Government in JPRS: 073754, pages 33–35).

Official Government Bulletin (Ministry of Foreign Affairs), "Japan's Economy—Current Status and Future Prospects," *Japan Times*, June 26, 1979, page 9.

"BoJ to Up Official Bank Rate to 7.25%," *Japan Times*, February 19, 1980, pages 1 and 3.

II. Germany

"Reserve Requirements Raised in W. Germany," *Japan Times*, June 20, 1970, page 11.

Steve Weber, "Inflation (Only 4%) Upsets Germans," *Kansas City Star*, July 1, 1970, page 2D.

'Wall Street Journal Staff Reporter,' "West Germany Cuts Borrowing Rate to 7% for Commercial Banks," *Wall Street Journal*, July 16, 1970, page 4.

"*Spiegel*-Interview mit Dr. Otmar Emminger, Vizepräsident der Deutschen Bundesbank," *Der Spiegel*, July 20, 1970, in *Auszüge aus Presseartikeln*, July 22, 1970, pages 6–7.

Karl Schiller, "Ansprache des Bundeswirtschaftsministers Professor Karl Schiller," September 21, 1970, speech, World Bank, in *Auszüge aus Presseartikeln*, September 24, 1970, pages 8–9.

Robert Mauthner, "Need to Combat Inflation," *Financial Times*, January 1, 1971, page 15.

Rudolf Herlt, "Lohn- und Preisforderungen gefährden Stabilität der Mark: Interview mit Bundesbankpräsident Klasen," *Die Welt*, January 23, 1971, pages 1–2; reprinted in *Auszüge aus Presseartikeln*, January 26, 1971, pages 1–2.

Karl Klasen, "Remarks on Our Common Efforts to Curb Inflation," speech, German-American Chamber of Commerce, New York, January 27, 1971, in *Auszüge aus Presseartikeln*, February 2, 1971, pages 2–4.

"W. Germany Not to Cut Bank Rate," *Irish Press*, March 18, 1971, page 12.

Editorial, “Kosteninflation,” *Frankfurter Allgemeine Zeitung*, March 18, 1971, page 1.

John Richards, “When Wages Go Boom! West Germany’s Conscientious Search for an Incomes Policy,” *Daily Telegraph*, April 1, 1971, page 11.

Rudolf Herlt, “Keine Recession—Nur Abbau der Überbeschäftigung: Interview mit Bundesminister Schiller über Preise, Löhne, Arbeitsplätze, Europa und die Währung,” *Die Welt*, June 23, 1971, page 7; reprinted in *Auszüge aus Presseartikeln*, June 24, 1971, pages 1–3.

Karl Schiller, “Ansprache des Bundesministers für Wirtschaft und Finanzen Professor Karl Schiller,” speech to the IMF and World Bank, Washington, DC, September 30, 1971, in *Auszüge aus Presseartikeln*, October 5, 1971, pages 3–5.

Report of the Deutsche Bundesbank for the Year 1971, April 1972.

Bruce van Voorst, “‘We’re a Pillar of Free Trade’: Interview with Helmut Schmidt,” *Newsweek* (European edition), August 21, 1972.

“In Bid to Fight Inflation, W. Germany Hikes Bank Rate to 3.5%,” *Japan Times*, October 8, 1972, page 11.

“Die Wirtschafts- und Finanzpolitik der nächsten vier Jahre” (interview with Finance Minister Helmut Schmidt), *Süddeutsche Zeitung*, December 21, 1972, reprinted in *Auszüge aus Presseartikeln*, January 2, 1973, pages 7–9.

Report of the Deutsche Bundesbank for the Year 1972, April 1973.

“To Check Steep Price Rise, W. Germany Raises Bank Rate to 6%,” *Japan Times*, May 5, 1973, page 11.

“Far-Reaching Measures to Curb Inflation,” *South China Morning Post*, May 11, 1973, page VI.

“Freeze Not Squeeze,” *The Economist*, June 9, 1973, pages 75–76.

UPI, “Erhard Urges Steps to Curb Inflation,” *Japan Times*, June 22, 1973, page 11.

Helmut Schlesinger, “Role of the Bundesbank,” *Financial Times*, October 8, 1973, “West Germany” special section, page IV.

Jess M. Lukomski, “Bundesbank’s Restrictive Credit Policy Under Fire from Dresdner Bank Official,” *Journal of Commerce*, November 5, 1973.

Otmar Emminger, “Probleme der Stabilitätspolitik,” speech, Frankfurt, November 9, 1973, in *Auszüge aus Presseartikeln*, November 9, 1973, pages 4–7.

Editorial, “What’s the German for Stagflation?,” *The Economist*, November 10, 1973, pages 92–93.

UPI, “Chancellor Brandt Says Wage, Price Freeze Not Planned by Bonn,” *Japan Times*, February 3, 1974, page 8.

Karl Klasen, “Inflation Fight Requires Money, Credit Restraint,” *American Banker* (*International Banker* section), June 27, 1974, pages 1A and 8A.

Diether Stolze and Rolf Zundel, “Neuer Aufschwung für die Wirtschaft: *Zeit*-Interview mit Bundeskanzler Helmut Schmidt,” *Die Zeit*, November 8, 1974, pages 3–4; reprinted in *Auszüge aus Presseartikeln*, November 12, 1974, pages 2–4.

“Erster Lichtblick: Bundesbankier Emminger über die Aussichten der Wirtschaft,” *Capital*, February 1975, pages 8–9.

“ ‘There Won’t Be a Global Recession’ ” (interview with Bundesbank President Klasen), *Newsweek* (European edition), February 17, 1975.

Frances Cairncross, “Keeping Inflation under Control” (interview with Bundesbank Vice-President Emminger), *The Guardian*, March 5, 1975, page 17.

Bundesbank Annual Report 1974, April 1975.

“Interview der *Süddeutsche Zeitung* mit Bundeskanzler Schmidt,” *Süddeutsche Zeitung*, June 24, 1975, reprinted in *Auszüge aus Presseartikeln*, July 1, 1975, pages 1–3.

Otmar Emminger, “The Role of the Central Banker,” remarks at World Banking Conference, London, December 10, 1975, in *Auszüge aus Presseartikeln*, December 19, 1975, pages 1–5.

Roger Carroll, “Do We Really Need Another Year of Pay Curbs?,” *The Sun*, March 9, 1977, pages 16–17.

Helmut Schlesinger, “Problems of Monetary Policy in Germany: Some Basic Issues,” address at Wiesbaden, September 29, 1977, in *Auszüge aus Presseartikeln*, October 11, 1977, pages 1–5.

Otmar Emminger, “Aktuelle Fragen der Geld- und Währungspolitik,” address at Wiesbaden, January 31, 1978, in *Auszüge aus Presseartikeln*, February 3, 1978, pages 1–5.

“Interview: Dr. Otmar Emminger,” *The Banker*, September 1978, pages 20–23.

Milton Friedman, “Inflation and Jobs,” *Newsweek* (U.S. edition), November 12, 1979, page 97.

Report of the Deutsche Bundesbank for the Year 1980, April 1981.

References

Ball, Laurence (1994). “What Determines the Sacrifice Ratio?.” In N.G. Mankiw (ed.), *Monetary Policy*. Chicago: University of Chicago Press. 155–188.

Bernanke, Ben. S., Thomas Laubach, Frederic S. Mishkin, and Adam S. Posen (1999). *Inflation Targeting: Lessons from the International Experience*. Princeton: Princeton University Press.

Bernanke, Ben S., and Ilian Mihov (1997). “What Does the Bundesbank Target?,” *European Economic Review*, Vol. 41(6), 1025–1053.

Braun, Anne Romalis (1986). *Wage Determination and Incomes Policy in Open Economies*. Washington, D.C.: IMF.

Brown, A.J., and Jane Darby (1985). *World Inflation Since 1950*. Cambridge, U.K.: Cambridge University Press.

Clarida, Richard, Jordi Galí, and Mark Gertler (1999). “The Science of Monetary Policy: A New Keynesian Perspective,” *Journal of Economic Literature*, Vol. 37(4), 1661–1707.

Clarida, Richard, and Mark Gertler (1997). “How the Bundesbank Conducts Monetary Policy.” In C.D. Romer and D.H. Romer (eds.), *Reducing Inflation: Motivation and Strategy*. Chicago: University of Chicago Press. 363–406.

Coenen, Günter, and Andrew T. Levin (2004). “Identifying the Influences of Nominal and Real Rigidities in Aggregate Price-Setting Behavior.” ECB Working Paper No. 418.

Committee on Banking, Housing, and Urban Affairs (1977). *First Meeting on the Conduct of Monetary Policy*. Washington, D.C.: U.S. Government Printing Office.

Culbertson, J.M. (1960). “Friedman on the Lag in Effect of Monetary Policy,” *Journal of Political Economy*, Vol. 68(6), 617–621.

DeLong, J. Bradford (1997). “America’s Peacetime Inflation: the 1970s.” In C.D. Romer and D.H. Romer (eds.), *Reducing Inflation: Motivation and Strategy*. Chicago: University of Chicago Press. 247–276.

Deutsche Bundesbank (1980). “Control of the Money Supply in the Federal Republic of Germany.” Memorandum, June 25, 1980, in Treasury and Civil Service Committee, *Monetary Policy Volume II: Minutes of Evidence*. London: HMSO, 1981. 290–297.

- Dudler, Hermann-Josef (1980). "Examination of Witnesses: Hermann-Josef Dudler." Testimony, November 10, 1980, in Treasury and Civil Service Committee, *Monetary Policy Volume II: Minutes of Evidence*. London: HMSO, 1981. 297–307.
- Emminger, Otmar (1977). *The D-Mark in the Conflict Between Internal and External Equilibrium, 1948–75*. Princeton University Essays in International Finance No. 122.
- Fels, Gerhard (1977). "Inflation in Germany." In L.B. Krause and W.S. Salant (eds.), *Worldwide Inflation: Theory and Recent Experience*. Washington, D.C.: Brookings Institution. 589–622.
- Franz, Wolfgang, and Robert J. Gordon (1993). "German and American Wage and Price Dynamics: Differences and Common Themes," *European Economic Review*, Vol. 37(4), 719–754.
- Friedman, Milton (1983). "Monetarism in Rhetoric and in Practice," *Bank of Japan Monetary and Economic Studies*, Vol. 1(2), 1–14.
- Friedman, Milton (1990). *Friedman in China*. Hong Kong: Chinese University Press.
- Gerberding, Christina, Andreas Worms, and Franz Seitz (2005). "How the Bundesbank Really Conducted Monetary Policy," *North American Journal of Economics and Finance*, Vol. 16(3), 277–292.
- Giannoni, Marc P. (2002). "Does Model Uncertainty Justify Caution? Robust Optimal Monetary Policy in a Forward-Looking Model," *Macroeconomic Dynamics*, Vol. 6(1), 111–144.
- Hamada, Koichi (1985). "Lessons from the Macroeconomic Performance of the Japanese Economy." In V.E. Argy and J.W. Nevile (eds.), *Inflation and Unemployment: Theory, Experience and Policy-Making*. London: George Allen and Unwin. 181–199.
- Hetzel, Robert L. (1999). "Japanese Monetary Policy: A Quantity Theory Perspective," *Federal Reserve Bank of Richmond Economic Quarterly*, Vol. 85(1), 1–25.
- Hillenbrand, Martin J. (1983). *Germany in an Era of Transition*. Paris: Atlantic Institute for International Affairs.

- Humphrey, Thomas M. (1985). "The Early History of the Phillips Curve," *Federal Reserve Bank of Richmond Economic Review*, Vol. 71(5), 17–24.
- Issing, Otmar (1997). "Monetary Targeting in Germany: The Stability of Monetary Policy and of the Monetary System," *Journal of Monetary Economics*, Vol. 39(1), 67–79.
- Issing, Otmar (2005). "Why Did the Great Inflation Not Happen in Germany?," *Federal Reserve Bank of St. Louis Review*, Vol. 87(2), 329–335.
- Komiya, Ryutaro, and Yoshio Suzuki (1977). "Inflation in Japan." In L.B. Krause and W.S. Salant (eds.), *Worldwide Inflation: Theory and Recent Experience*. Washington, D.C.: Brookings Institution. 303–348.
- Laidler, David (1978). "Review: *Towards Full Employment and Price Stability*," *Journal of Economic Literature*, Vol. 16(3), 1040–1044.
- McCracken, Paul, *et al* (1977). *Towards Full Employment and Price Stability*. Paris: OECD.
- Nelson, Edward (2005). "The Great Inflation of the Seventies: What Really Happened?," *Advances in Macroeconomics*, Vol. 5(1), Article 3.
- OECD (1973). *The Measurement of Domestic Cyclical Fluctuations*. Paris: OECD.
- Orphanides, Athanasios (2003). "The Quest for Prosperity without Inflation," *Journal of Monetary Economics*, Vol. 50(3), 633–663.
- Orphanides, Athanasios, and John C. Williams (2006). "Inflation Targeting under Imperfect Knowledge." Federal Reserve Bank of San Francisco Working Paper 2006–14.
- Rasche, Robert H. (1990). "Equilibrium Income and Interest Elasticities of the Demand for M1 in Japan," *Bank of Japan Monetary and Economic Studies*, Vol. 8(2), 31–58.
- Romer, Christina D., and David H. Romer (2002). "The Evolution of Economic Understanding and Postwar Stabilization Policy." In *Rethinking Stabilization Policy*. Kansas City, MO: Federal Reserve Bank of Kansas City. 11–78.

Singleton, Kenneth J. (ed.) (1993). *Japanese Monetary Policy*. Chicago: University of Chicago Press.

Suzuki, Yoshio (1981). "Why Is the Performance of the Japanese Economy So Much Better?," *Journal of Japanese Studies*, Vol. 7(2), 403–413.

Suzuki, Yoshio (1985). "Japan's Monetary Policy over the Past 10 Years," *Bank of Japan Monetary and Economic Studies*, Vol. 3(2), 1–9.

Taylor, John B. (1980). "Aggregate Dynamics and Staggered Contracts," *Journal of Political Economy*, Vol. 88(1), 1–23.

Taylor, John B. (1989). "Differences in Economic Fluctuations in Japan and the United States: The Role of Nominal Rigidities," *Journal of the Japanese and International Economies*, Vol. 3(2), 127–144.

Thatcher, Margaret (1995). *The Path to Power*. London: HarperCollins.

Ueda, Kazuo (1993). "Japanese Monetary Policy from 1970 to 1990: Rules or Discretion?" In K. Shigehara (ed.), *Price Stabilization in the 1990s: Domestic and International Policy Requirements*. London: Macmillan. 191–212.

von Hagen, Jürgen (1999a). "Money Growth Targeting by the Bundesbank," *Journal of Monetary Economics*, Vol. 43(3), 681–701.

von Hagen, Jürgen (1999b). "A New Approach to Monetary Policy (1971–8)." In Deutsche Bundesbank (ed.), *Fifty Years of the Deutsche Mark: Central Bank and the Currency in Germany Since 1948*. Oxford: Oxford University Press. 403–438.

Walsh, Carl E. (2003). "Speed-Limit Policies: The Output Gap and Optimal Monetary Policy," *American Economic Review*, Vol. 93(1), 265–278.

West, Kenneth D. (1993). "An Aggregate Demand-Aggregate Supply Analysis of Japanese Monetary Policy, 1973–1990." In K.J. Singleton (ed.), *Japanese Monetary Policy*. Chicago: University of Chicago Press. 161–188.