

IS MONETARISM DEAD?

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The question addressed in this paper—"Is Monetarism Dead?"—is one that is being asked by many people nowadays as the link between money growth and inflation appears to have weakened. Yet it is an absurd question because it implies the death of a well-established theory—the quantity theory of money—which has been around in one form or another since David Hume and Adam Smith. I have elected to address this question, nevertheless, because it gives me an opportunity to say some things about the criticism of monetarism, why some economists react emotionally to monetarist doctrine, and to offer some additional insights into the alleged monetarist policies followed by the Federal Reserve from 1979 to 1982.¹ Finally, I hope to caution people in the financial markets.

Monetarism and Its Critics

Monetarism typically is identified with Milton Friedman's proposal that the Federal Reserve should choose an appropriate rate of growth for money and then stick to it. In this sense, monetarism has *never* been tried by the Federal Reserve and probably never will be tried. Friedman (1986) in his presidential address to the Western Economic Association in July 1985, pointed out that monetary authorities, like people in the marketplace, pursue their own interests in accordance with Adam Smith's invisible hand. Central bankers, as such, prefer the power and prestige that comes with presiding over volatility and crisis. Friedman was not critical of this normal behavior, but he now realizes that his efforts over the past 30 years to persuade the Fed to follow a fixed and stable rule were futile.

Cato Journal, Vol. 6, No. 2 (Fall 1986). Copyright © Cato Institute. All rights reserved. The author is President of Leif H. Olsen Associates, Inc. and former Chief Economist at Citicorp. This paper is a revised version of the author's luncheon address presented at the Cato Institute's Fourth Annual Monetary Conference (16 January 1986).

¹Compare Brunner (1983).

Monetarism is also generally associated with the belief held by many—one might say most—economists that money is the most important economic policy tool available to government. Monetary policy, in other words, is not only important, it is dominant. This is certainly the opinion of those economists who employ the quantity theory of money in their forecasting methodologies.

It appears that people in the marketplace, who listen to the critics of monetarism, may believe, at least momentarily, that monetarism is dead. The opponents of monetarism claim that in 1979 the Federal Reserve adopted monetarist principles in the execution of policy and then ended it in 1982. They also point out, as the whole market knows, that Friedman incorrectly forecast an acceleration of inflation for 1984. As the world's foremost monetarist, his error cast doubt on the validity of monetarist theories regarding the relationship between an acceleration in growth of money and inflation. In 1985 nominal GNP failed to accelerate as monetarists kept predicting, further casting doubt on monetarist models linking changes in money growth to changes in nominal GNP. Finally, the Federal Reserve has become much less concerned, at least publicly, about overshooting its money targets.

The detractors of monetarism have pointed to all these events and have contributed to the confusion and misinformation about what, if anything, has died. This is no academic matter. The market, failing for the moment to understand that debaters have an ax to grind, may believe that, contrary to what monetarists have said, money is not so important after all. That erroneous belief eventually could prove to be very costly to business decisionmakers and financial portfolio managers.

The Nature of the Debate

I think it is important to understand the nature of the debate in order to understand the claim that "monetarism is dead" and the hazards in burying the wrong body. Let me begin by asking why some economists react so vehemently to monetarism. Are they troubled by the shortcomings in monetary policy? Are they seeking ways to improve its efficiency? The answer to both these questions is no. Those who would respond positively would quickly become professional bedfellows with monetarists. Why then do some economists become so angry when they discuss monetarism?

Before proceeding with some answers to these questions, allow me to interject some personal observations. Starting at a point roughly coincident with the publication of "Friedman and Schwartz's mon-

umental work, *A Monetary History of the United States* (1963), Citibank's economic staff (of which I was a member) began to incorporate the quantity theory of money in the general framework of our economic forecasts. Jim Meigs was prominent in persuading us of its value and he was right. I have found it to be invaluable in producing better than average forecasts of changes and direction in nominal demand and nominal output. It has also helped in forecasting inflation when estimating where the economy stands relative to its potential or capacity to produce in real terms.

I have not been prominent in prescribing the quantity theory of money, or a fixed rule, for the conduct of policy. Those who have done so have been subject to unusually vitriolic abuse, implying all sorts of intellectual shortcomings. The unnatural character of these attacks is perhaps highlighted by the fact that many economists and central bankers, before embarking on a knowledgeable and sensible discussion of monetary policy, have felt compelled to use the protective phrase, "I'm not a monetarist, but . . ." before proceeding with their remarks. Peter Bernstein, for example, writing recently in the *Wall Street Journal* (1986), felt compelled before commenting on the link between money growth and inflation to say, "You don't have to be a doctrinaire monetarist . . ."

Although I have not involved myself in this debate, I, of course, have a point of view, and I think it is time for me to speak out more forcefully. In trying to help people make intelligent business and financial decisions, the unexpected discretionary shifts in monetary policy often have made my life very difficult. But, having worked in the marketplace for more than 20 years with the quantity of money, I have listened to the debate from the front row and I do have some observations—especially about who the antimonetarists are and the nature of the evidence they draw on to support their claim that "monetarism is dead."

Who Are the Antimonetarists?

About three years ago, I was routinely reading through a stack of speeches, essays, and monographs on my desk, and among the papers was the *AEI Economist* for March 1983, containing an article "Two Views of Monetary Policy," written by George L. Perry, a senior fellow at Brookings Institution, and Herbert Stein, a senior fellow at the American Enterprise Institute and a former chairman of the Presidents Council of Economics Advisers. Perry severely criticized monetarism for its theoretical shortcomings and for causing great damage to the economy during the 1979–82 period, during which

the Federal Reserve supposedly employed monetarist principles in its execution of policy. According to Perry: "It [monetarism] alleges that steady growth of money, over whatever time interval, is the best available means to achieve steady growth of nominal GNP. Both theory and the historical record cast serious doubt on that proposition."

Herb Stein, who is not identified in the economic profession's caste system as a monetarist, by contrast said: "In general, the function of monetary policy is to achieve a stable and predictable trend of nominal GNP that is compatible with a stable and low rate of inflation." There were also substantial differences between Perry and Stein about the link between money growth and inflation. Perry argued that the development of money substitutes could interfere with the Fed's conduct of monetary policy. He also argued that trying to target a specific price level could jeopardize real output and employment targets, and that price shocks such as an oil price increase should be accommodated by "allowing faster growth in GNP." As an aside, I had some difficulty squaring that neat maneuver with Perry's earlier argument that the link between money growth and nominal GNP was loose.

Stein, on the other hand, never used the word "monetarist." His tone was not vitriolic and he made a reasoned case for a further reduction of inflation over the long run using the quantity theory of money. From this, one might logically conclude that Perry's view is a typical, traditional Keynesian interpretation of monetary policy and Stein's is, well, monetarist.

At the same time I came across the Perry and Stein article, I also found the testimony of a prominent economist (also a personal friend) before a House subcommittee. The subject was controlling inflation. My friend's remarks were largely a polemic against monetarism. He, like Perry, was angry. He was not merely abrasive; he was caustic. I was so taken aback by the emotionalism in his remarks that I called and went to see him, pondering all the way to his office the contrast between Stein and Perry. When I arrived, I asked him why he was so angry with monetarists. After all, economic forecasters had benefited from monetarist theories over the years. If he believed there were deficiencies in the application of the quantity theory of money to the execution of policy, monetarists would certainly welcome constructive contributions to the literature.

His impulsive response was, "Monetarists told Wall Street that an excessive rate of money growth is a necessary ingredient to inflation and they should never have done that." The "basic cause of inflation," he said, "is the political ideology of the country." He added

that in our complex, mixed economy inflation has many causes. I expressed the view that monetarists have also raised the question of why political forces encourage an excessive rate of money growth. But he continued his strong criticism, maintaining that monetarists' prescription for correcting inflation through monetary restraint and recessions imposes social costs that are unacceptable. In effect, the Federal Reserve should not do this.

A standard issue with nonmonetarists is that monetarists want to fight inflation with unemployment. It is a legitimate issue. The cost of correcting inflation via a recession, particularly in terms of personal, family, and community stress, can hardly be overstated. Monetarists have written and spoken extensively about the pain of correcting inflation, and it is for this reason they are so active in seeking and proposing policy strategies and improvements in policy execution that would prevent inflation from developing in the first place. Nevertheless, the argument against using restrictive monetary policies to fight inflation is a familiar issue. The other point my friend made was that monetarists should not have told the markets about the link between money and inflation. In persuading the financial markets' participants that excessive money growth leads to inflation, monetarists caused them to react skittishly, pushing up interest rates every time the Federal Reserve allowed money growth to exceed its target path. "This," he said, "robbed the Federal Reserve of the ability to be flexible and to pursue, when needed, higher rates of money growth." In short, monetarists were guilty of educating the financial markets about the dangers of discretionary monetary policy swings.

My friend's criticism gave me a different insight as I later read and reread countless speeches, essays, and professional papers of those who have spoken out sharply against monetarism. In the first place, their arguments were largely in one direction: they seldom offered any constructive advice or analysis to improve the efficiency of monetary policy. Their discussions generally implied that monetary policy cannot be improved upon very much and in any event it is less important than fiscal policy. In short, they argued that monetary policy is doing about all that can be expected.

Some critics of monetarism have concluded that money is a given and forecasters should conclude that whatever quantity is "needed" will be provided. But more than this, I noted that in sharp contrast to the normal debate and criticism that takes place in the professional literature, monetarism often invoked an emotional response similar to that of my friend. The rhetoric was biting, often personally demeaning, and sarcastic in tone. Why, I wondered, did economists,

who otherwise wrote and spoke in thoughtful, balanced ways react with such vehemence when discussing monetarist doctrines. There must be more than economic theories involved in this debate and the following is what I concluded.

*Antimonetarist Policy:
A Bundle of Contradictions*

From my reading of preambles to congressional hearings and public speeches of elected officials it is clear that the economic regime sought after and favored by the political establishment is one that is characterized by the following objectives:

- High levels of employment and a low unemployment rate;
- A more equal distribution of income, while protecting property rights and rewards for achievement;
- A very expansionary monetary policy with low interest rates and little inflation;
- High government spending and a tax system that is not perceived to be burdensome;
- An exchange rate that provides a marginal advantage to exporters.

These objectives, of course, constitute a bundle of contradictions. When any one of these objectives is sought, it sets in motion market forces that would frustrate the achievement of another. Consequently, such objectives are, in any significant degree, unachievable simultaneously. Yet there is a community of economists who sincerely believe that they should endeavor to find programs and methods that come as close as possible in delivering the economic regime—this collection of contradictions—idealized by the political establishment. The difficulty of reconciling these objectives, however, has perplexed economists for years and has provided the basis for much of the debate over macroeconomic policies. This debate has involved the Phillip's curve, the role and mix of monetary and fiscal policies and, above all, the endless arguments about the role of government and the operation of a free market economy.

Adversaries of the Market

Those economists who seek to find ways of reconciling the conflicting economic goals of policymakers recognize that they must find ways of frustrating the natural market responses to government policy initiatives. This means government officials should control markets with a variety of instruments—tax incentives or disincentives and the like—to counter the natural behavior of market participants. These efforts have rarely met with success; consequently, this community of economists has come to regard the free market and its inhabitants

as adversaries. From this adversarial position springs such phrases as "foreign exchange speculators are responsible for the high dollar," or "inflation is due to the monopoly power of labor," or "high interest rates are administered by banks." More recently, I came across the accusation that our trade deficit is due to the greediness of retailers who buy abroad!

In combating an adversary where there are no prescribed rules, it is legitimate to deceive, restrict, and even lie to people in the marketplace. In this combat anyone who gives comfort to the enemy by educating them or supporting their free actions—and opposing government intervention—also becomes an enemy.

I am not criticizing these economists for reaching these conclusions. If they believe that the public is ultimately better served by a government that intervenes in the market to control the behavior of its citizens, then to be even marginally successful they must respond to the challenges of people in the market. Since monetarists are trying to educate market participants, antimonetarists are, quite naturally, dedicated to denying even a semblance of truth to what monetarists say, and perhaps even promoting the idea that monetarism is dead.

Market participants, incidentally, should learn to be wary of advice given by adversaries. In short, they should learn to distinguish friend from foe. Monetarists are friends of the marketplace. I have found them to be just that in more than 20 years of reading their papers. It is largely because monetarists try to warn the market of the consequences of bad or contradictory policies that they are criticized with uncommonly strong language.

Disregard of Monetarist Principles

Monetarists have been held somehow responsible for providing the Federal Reserve with procedural direction for monetary policy from 1979 to 1982, and for the economic troubles of that period. These criticisms are directed at economists who never held a policymaking position, and who never cast a vote at meetings of the Federal Open Market Committee. The *assertion* that monetarism was tried by the Fed and discarded is important because it implies that monetarism in all its forms, including the quantity theory of money, has little validity and should be largely ignored as it was from the 1930s to the 1960s.

In his book, *Beyond Monetarism*, Marc Miles (1984, p. 7) wrote: "On October 6, 1979, the Federal Reserve publicly announced it would begin basing its monetary policy on monetarism. . . . The Fed now was to adopt the monetarist goal of maintaining a slow growth

in monetary aggregates.” Miles’s statement is an example of the casual scholarship of many antimonetarists who have commented on the Federal Reserve’s 1979 decision. A more carefully crafted statement, but nonetheless misleading, was made by Perry in his 1983 remarks in the *AEI Economist*: “In our recent past, the operating procedures of monetarism have governed the conduct of monetary policy to a much greater degree than ever before. It has never been pure enough monetarism to keep the purists happy or to keep them from disowning some of the economic performance that resulted.”

Actually, the Fed’s 1979 announcement said nothing about monetarism. The Federal Open Market Committee felt driven to place primary emphasis on controlling bank reserves because, as the FOMC minutes state: “In the present environment of rapid inflation, estimates of the relationship among interest rates, monetary growth, and economic activity had become less reliable than before, and monetary growth since the first quarter of 1979 had exceeded the rates expected despite substantial increases in short-term interest rates.”² One of the major reasons for the policy change was that established procedures were not working. The FOMC did not undertake a voluntary experiment in monetarism. Thus, what followed was not policy according to monetarist principles.

Here I would like to share with you a personal story that helps to show how far the Federal Reserve strayed from its so-called monetarist principles. In June 1977, my associates and I were locked in debate over our five-year forecast. We concluded that the size of the gap in potential GNP, that is, the amount of excess capacity, had been overestimated by the President’s Council of Economic Advisers, and if the administration continued along the expansionary policies then being pursued, by 1980 President Carter would be campaigning in the midst of either very high inflation or a recession.

Some of my associates believed the policymakers would perceive the risk and throttle back. Others thought they would not. To settle the dispute we visited Washington to express our concerns. We talked with Lyle Gramley, then a member of the Council of Economic Advisers; Alice Rivlin, who as I remember made no comment; her senior associate, Frank DeLeeuw; and Charles Partee and Henry Wallich, governors of the Federal Reserve. What we heard convinced us that policies of expansion would not be throttled back but would instead continue to push for strong growth. We were unable to persuade them that our concerns were legitimate. In September 1977,

²See Federal Open Market Committee (1979) for the full statement.

we published our five-year forecast, which included our projections of higher inflation and higher interest rates peaking with a recession.

In President Carter's 1976 *Economic Report*, he said: "We must continue to move steadily toward a higher employment economy in which the benefits of prosperity are widely shared." And he added: "I believe we can increase our real output by $4\frac{1}{2}$ to 5 percent per year, and reduce unemployment by $\frac{1}{2}$ of a percentage point each year." Seeking to reduce the unemployment rate was not surprising. The belief was pervasive that economic recovery from the 1973-75 recession was unusually slow. Unemployment was widely regarded as the number one economic problem at the time. However, instead of the joy of moving the economy to greater prosperity, as was envisioned at the opening of President Carter's term in office, economic policymakers found themselves locked in nearly three years of exasperating and unsuccessful efforts to curb inflation.

Inflation began to accelerate early in 1978, long before the second oil shock layered higher prices onto the price indexes. By April 1978, Carter's economic advisers saw clearly that their strategy was wrong; they issued a memorandum to the President, urging him to shift priorities from further reducing the unemployment rate to fighting inflation. That announcement was dramatic in that it repudiated economic strategies that only three months earlier had been set forth in the President's budget message and in the *Economic Report* of the President's Council of Economic Advisers. What produced this dramatic turnaround in April 1978 was the evidence contained in the employment data, indicating that the unemployment rate had declined at a rate consistent with an economic growth rate of 7 percent per annum when in reality the growth rate was only 4 percent during the preceding year. This evidence suggested to Carter's advisers that the economy was much closer to capacity than had been assumed. Belatedly, President Carter's economic advisers recognized they no longer had latitude to continue to pursue highly expansionary policies.

Much emphasis is normally placed on the Fed's October 1979 announcement of a change in operating procedure—from targeting the interest rate on federal funds to directly targeting reserves—as the dramatic moment when U.S. economic policy changed, ushering in monetary restraint, high interest rates, and heightened volatility in money markets. But the real change in policy occurred earlier: in April 1978 when Carter's economic advisers presented their memorandum. The antiinflation strategy contained in that memorandum, however, sought to avoid a recession, making the strategy as a whole questionable from the perspective of the financial markets. In his 1979 *Economic Report*, President Carter said: "We will not try to

wring inflation out of our economic system by pursuing policies designed to bring about a recession. That course of action would be unfair." His economic advisers concurred: "Restraint must be applied in a measured way to moderate growth without producing a recession."

In the midst of this struggle to quell inflation without a recession, the Fed announced it would emphasize control of bank reserves, but the policy environment was hardly conducive to the monetarists' fixed money-growth rule. In fact, the Fed's policy change was to produce a tragic example of the damage that discretionary policy changes can inflict on the economy; it also probably caused the 1981–82 recession to be deeper than it would have been had an anti-inflationary monetary policy been permitted to persist even if that meant an earlier but milder recession.

Credit controls were imposed in the first half of 1980 in the misguided belief that they could help the Federal Reserve in fulfilling the administration's efforts to restrain inflation but avoid a recession. Credit controls added to the recessionary influence of tighter monetary policy and resulted in a 0.1 percent decline at an annual rate in nominal GNP and a 9.1 percent drop at an annual rate in real GNP in the second quarter of 1980—the presidential election year.

Credit controls were removed hastily in July 1980 about a month after the Fed shifted sharply to an expansionary monetary policy. By the first quarter of 1981 nominal GNP soared by 19.6 percent at an annual rate and real GNP by 8 percent at an annual rate. This represented a nearly 17 percent turnaround in the growth of real GNP in the space of nine months. Inflation, however, showed no signs of abating, and inflationary expectations were higher than ever in the winter of 1980–81 with interest rates at the highest levels in the country's history.

Although restraint without recession was politically appealing, the financial markets viewed such a strategy with a good deal of skepticism. Indeed, market participants believed such a policy could spell disaster because it countenanced the continuation of rapid money growth on average and a highly volatile economy swinging between the promise of lower inflation and the reality of higher inflation.

Prior to 1978, monetary policy was not followed as closely by the financial markets as it has been in recent years. (Fed watchers were not employed at the time.) The financial markets were relatively disinterested in monetary policy because the link between inflation, rising interest rates, and high money growth was not generally recognized. Inflation was deemed to be a function of random shocks such as bad harvests, the OPEC cartel pricing, and excessive wage demands. An entire generation of students had been exposed to

economics courses that largely omitted or downplayed the importance of the quantity theory of money. In 1978, however, the bond market gradually began to perceive that inflation was not the product of random shocks, but was caused by imprudent monetary and fiscal policies. The financial markets then adopted a longer run monetarist view of inflation, seeing it as a persistent problem that surfaced in the mid-1960s and became increasingly severe during the 1970s.

As more people came to believe that inflation was caused by expansionary monetary and fiscal policies, they concluded that it could only be stopped by a reversal of those policies. But the Federal Reserve's hesitation to pursue a noninflationary path of money growth became evident: each time a recession began to unfold the Fed would quickly return to monetary stimulus. Such policy reversals gave credence to the cynical view in the financial markets that the government lacked not only the ability but also the willingness to reduce inflation. The Fed's hesitancy in those years, 1978–80, produced a stop-go strategy that was accompanied by accelerating inflation and a second round of oil price increases. It was most emphatically not an experiment in monetarism.

The Federal Reserve's hesitation to stick to an anti-inflation policy each time a recession began to unfold produced a series of short cycles, which never lasted long enough to generate excess capacity and lower inflation. During these periods, however, when the Fed did temporarily restrain money growth, there was an upward push to short-term interest rates, which were also moved higher by the strong demand for short-term credit in an economy with sharp increases in nominal income. Such short-term cycles gave us three years of an inverted yield curve when looked at in terms of annual averages, and created chaos in the financial markets. They have never been the same since. Even today, after nearly four years of relatively low inflation and a steeply upward-sloping yield curve, fears of a repetition of the inflation experience and interest-rate consequences of 1979 to 1981 are not far below the surface of the market.

Commenting on the Fed's erratic performance, Friedman (1985) wrote: "Since the Fed adopted temporarily the rhetoric of monetarism, in 1979, monetary growth has been more unstable than in any other postwar period of comparable length. That hardly constitutes a monetarist policy, and it has had the anticipated results: similar instability in interest rates, the economy and exchange rates."

Is Monetarism Really Dead?

Earlier when I discussed my 1977 visit to Washington, it was not to suggest that I and my associates at Citibank were more prescient

than the policymakers, but to underscore that we reached the worrisome views we held about the future by using the quantity theory of money—monetarist principles—in our forecasting methodology. For years it had helped us to successfully forecast cyclical turning points. Yet in the years 1978 through 1980, during which the Federal Reserve was presumed to be following monetarism—that is, controlling the growth of money aggregates—we were unable to anticipate the volatility in the Fed's discretionary policy initiatives. If this was monetarism, one would have expected that economists who were familiar with its tenets and knew how to apply it to forecasting would have been more successful. We were not. Nor was the Federal Reserve itself, which tried in vain to reduce inflation without causing a recession. Indeed, the Fed may have created such distortion in the relationship between money growth and interest rates that it was forced to place greater emphasis on controlling the money aggregates, albeit very imperfectly.

The Reagan administration allowed the Fed greater "independence" and the move to monetary restraint in December 1980 was allowed to persist. In fact, the minutes of the Federal Open Market Committee showed that monetary restraint was more severe and of longer duration than intended during the first half of 1982. But inflation was broken and interest rates fell sharply in the second half of 1982.

The unevenness of Federal Reserve policy experienced during the Carter administration continued during the Reagan administration. In 1981, things worked pretty close to the Fed's objectives and expectations, and the economy actually did a little better than the Fed forecast. However, the 1982 recession turned out to be much deeper than the Fed expected, and the 1983 recovery was much more robust than expected. Monetary policy became overly expansionary in 1983, and in a lagged response the economy was unusually strong in 1984. The FOMC responded with a tightening in monetary policy in late 1983 continuing until October 1984. Money growth slowed and interest rates climbed sharply in the first half of 1984. Once again the economy responded with a lag, slowing down in the second half of 1984. In October 1984, monetary policy shifted back to expansion, continuing through 1985 with M1 and credit significantly exceeding the Fed's targets. Demand climbed but domestic production remained low as increased imports satisfied a large part of the relatively high demand stimulated by monetary policy. In 1986, with policy continuing to follow a path that will ultimately produce significantly greater output than in recent years, we should not be surprised by another lagged response on the high side.

Throughout this period the financial markets have responded by moving interest rates higher whenever the Federal Reserve overshot its money targets. This reaction seemed to stem in part from concern over the inflation that would result if the high money growth continued indefinitely, and in part from expectations that monetary authorities would tighten in the near term in order to slow money growth, thus pushing interest rates higher. The Federal Reserve's desire to build and maintain its credibility with skeptical financial markets—still shaken from the events of 1979 to 1981—is a key element in developing a scenario for a future free from any sustained inverted yield curve. This key element is likely to be tested in 1986.

Current market and Federal Reserve behavior is at odds with recent history. For more than a year now, the Fed has been content to allow money growth to significantly exceed predetermined targets. The financial markets not only have expressed little concern about such high money growth, but have bid bond prices higher in expectation that even greater monetary ease will ensue. Both the market and the Fed recognize that nominal GNP has not responded to the relatively higher money growth because of falling velocity. Real GNP growth has also been moderate.

Monetary doctrine, holding that there is a link with relatively short lags between an acceleration in money growth and an acceleration in nominal GNP, appears to have been discredited for the moment in the financial markets. The markets have apparently returned to the view held prior to 1978, namely, that inflation is a product of random price shocks. With oil prices declining, bumper crops, no excessive wage demands, and the promise of reductions in the federal deficit there seems little likelihood that inflation is an imminent threat. With fears of inflation abating, the markets have raised the present value of future income. The rise of price-earnings multiples as well as the rise in bond prices is evidence of this. How can we explain the apparent break in the relationship between money growth and inflation?

Monetarism, in the sense of Irving Fisher's famous equation, $MV = PT$, says money times velocity equals prices (appropriately weighted) times transactions. High money growth over the past year (M1 grew by over 11 percent in 1985) has produced a relatively large number of money transactions. However, Lindley Clark (1986) has noted (in an article discussing recent work by Jerry Jordan) that transactions have included many goods from abroad. And since GNP measures output but not transactions at current prices, those who insist that monetarism no longer works are looking at the wrong numbers.

As velocity stops declining, the economy (in terms of final demand) will show unambiguous signs of accelerating. Indeed, it already appears to be doing so. Moreover, with the dollar down, it is likely that additional demand will come to the order books of domestic producers. At some point demand will significantly race ahead of potential or capacity and the Federal Reserve will have to slow down money growth, as it has in the past. At that point the economy will again embark on the roller-coaster path that makes it so difficult for private entrepreneurs to plan effectively.

The Fed is not monetarist in its conduct of monetary policy. But it is monetarist in the sense that Fed policymakers understand the quantity theory of money, that is, they understand that changing the growth rate of money aggregates eventually will effect the growth of nominal GNP, and with it the rate of inflation and employment. This same understanding, however, does not seem to be true of a great many economists who speak reverently about the Federal Reserve and who defend it against the criticism of monetarists, yet who fail to include more than a passing reference to Fed policy in their forecasts. Witness, for example, the consensus forecast of economists for 1986. The economy is expected to continue to perform much the same as in 1985 with slow stable growth and low inflation. How valid is such a forecast when considered against the current expansionary monetary policy, high domestic demand, inventory rebuilding, and the lower dollar?

It is difficult to be persuaded that Federal Reserve policy is unimportant for the economic well-being of the country. Monetary policy decisions are certainly worthy of careful analysis by private economic forecasters. If the FOMC's work proves to have little value to the forecasters because of the unpredictable responses of the economy, then it will have been futile for the policymakers to have attempted to steer the economy with discretionary decisions based on their forecasts of what policy could accomplish. Indeed, I fail to see the logic in the reasoning that says, "Yes, monetary policy has a powerful effect on the economy but it is so unpredictable, so unreliable that forecasters should ignore it or should simply make implicit arbitrary assumptions about what monetary policy will deliver." Such reasoning or such advice is not kind to market decisionmakers who rely on it.

Readers of the monetarist debate, especially those who are active in the financial markets, should be warned that there is one other kind of antimonetarist who lies in ambush. I call him the "fastest gun in the West." There is always a young economist who seeks instant fame by intellectually outdrawing and outshooting a monetarist Mar-

shall Matt Dillon, otherwise known as Milton Friedman, Karl Brunner, or Allan Meltzer. They have often nicked their target unfairly in the back, but the intellectual "Boot Hill" is filled with such would-be fast guns.

Although there are many who would like to see the death of monetarism, it is far from dead. Even traditional Keynesians such as James Tobin and Paul Samuelson now admit the importance of money. Writing in the *The Economist* in April 1985, Tobin stated that today mainstream Keynesians generally accept the monetarist proposition that "money matters." He mentioned, however, that Keynesians traditionally "resented the popular monetarism/fiscalism dichotomy" and "opposed Professor Friedman's stronger contention that money is all that matters in the sense that fiscal policy has insignificant effects of such macroeconomic outcomes as real GNP, employment and prices." Samuelson, meanwhile, noted in 1985 upon the release of the 12th edition of his famous principles text (coedited with William Nordhaus): "In the early edition, fiscal policy was top banana. In later editions that emphasis changed to equality. In this edition, we've taken a stand that monetary policy is the most important."³

Despite the "resentment" of some Keynesians, monetarist thinking is still alive and well. Money's importance was lost for a time as the Keynesian revolution swept the economics profession—from the 1930s through the 1950s—but the work of such well-known monetarists as Friedman and Schwartz and Brunner and Meltzer have made money the dominant variable in explaining business cycles. The linkage between monetary disturbances and changes in nominal GNP is well recognized and of use to market participants. The current lapse in this relationship notwithstanding.

Prior to the late 1960s, the word "money" was seldom seen in the economic reports of the Council of Economic Advisers, the reports of international trading agencies, and virtually in all economic forecasting papers. That situation has now been radically changed, as market participants are well informed about current monetary policy and its probable effects on economic activity. And, as markets become more sophisticated around the globe, it will become even harder to fool those who follow market trends into believing that more rapid monetary growth will not create inflation. Monetarist principles have yet to be disproven; and monetarism has yet to be tried. It is hazardous for market participants to think otherwise.

³Paul A. Samuelson, as quoted in an interview with the *New York Times* (17 February 1985).

References

- Bernstein, Peter. "The Gramm-Rudman Economy." *Wall Street Journal* (14 January 1986): 30.
- Brunner, Karl. "Has Monetarism Failed?" *Cato Journal* 3 (Spring 1983): 23-62.
- Clark, Lindley H., Jr. "The Money Game Goes On but the Rules Have Changed." *Wall Street Journal* (7 January 1986): op-ed.
- Economic Report of the President*. Washington, D.C.: Government Printing Office, various years.
- Federal Open Market Committee. "Record of Policy Actions of the Federal Open Market Committee." *Federal Reserve Bulletin* 65 (December 1979): 972-78.
- Friedman, Milton. "The Fed's Monetarism Was Never Anything But Rhetoric." *Wall Street Journal* (18 December 1985): letters to the editor.
- Friedman, Milton. "Economists and Economic Policy." *Economic Inquiry* 24 (January 1986): 1-10.
- Friedman, Milton, and Schwartz, Anna. J. *A Monetary History of the United States, 1867-1960*. Princeton: Princeton University Press, 1963.
- Miles, Marc A. *Beyond Monetarism: Finding the Road to Stable Money*. New York: Basic Books, 1984.
- Perry, George L., and Stein, Herbert. "Two Views of Monetary Policy." *AEI Economist* (March 1983): 1-8.
- Tobin, James. "Monetarism: An Ebbing Tide?" *The Economist* (27 April 1985).

THE IMPLEMENTATION AND MAINTENANCE OF A MONETARY CONSTITUTION

Peter Bernholz

The Inflationary Bias of Government and Problems of Monetary Constitutions

The present age of discretionary monetary policies, which began in 1914, has turned out to be an age of permanent inflation. Inflation rates have ranged from low and moderate to hyperinflationary, but have scarcely anywhere and mainly only during the Great Depression been absent. It is true that countries with rather independent central banks have enjoyed lower rates of inflation (Parkin and Bade 1978), but the long-term effects in those countries still have been substantial.

This development stands in strong contrast to what prevailed before 1914, when sound monetary constitutions provided an anchor for the value of money, using either pure gold or silver standards (see Table 1). An inflationary bias, however, is not the only characteristic by which different monetary constitutions can and should be judged. The variance of such real factors as unemployment, business activity, or real interest rates may well be as important. And it is possible that in some countries these variances were higher under the gold standard than under the present discretionary system (Bernholz 1983; Meltzer 1984). Nevertheless, many economists are now convinced that to eliminate permanent inflation we have to return to a monetary constitution that binds the hands of government and the central bank.

Proposals for a sound monetary constitution are wide-ranging. They include proposals for stabilizing the monetary unit in terms of a price index (Fisher 1912; Simons 1948), constraining the issue of fiat money

TABLE 1
PRICE-LEVEL CHANGES IN SELECTED COUNTRIES, 1750–1980

Year	Wholesale Price Index				United States
	Great Britain	Germany	France	Switzerland	
1750	107.95	—	—	—	—
1790	—	—	—	—	100
1792	100	100	100 ^d	—	—
1800	171.5	173.1	100	—	143
1810	173.9	169.2	140.7	—	146
1820	130.7	115.4	77.8 ^e	—	118
1830	107.4	100	67.4	—	101
1840	116.5	102.6	69.1	—	106
1850	83.5	91.0	95.9	—	93
1860	112.5 ^a	120.5	124.4	—	103
1870	109.6	118.0	114.9	—	150
1880	107.6	111.5	103.7	—	111
1890	86.3	110.9	86.4	—	91
1900	83.4	115.4	85.5	—	91
1910	90.2	119.2	93.3	—	115
1913	—	134.6	100.2	—	113
1914	97.9	—	101.9	134.6 ^f	111

1921	195.8	2,318.1	341.8	263.6	159
1930	119.7	167.7 ^b	521.7	168.8	141
1938	121.0	133.4	617.6	144.1	128
1950	313.4	244.1 ^c	12,225	295.6	258
1960	423.1	293.7	20,376	311.0	299
1970	566.5	325.3	27,271	378.4	348
1980	2,136.8	534.9	59,305	528.3	739

Period	Average Annual Rate of Inflation (%)				
1750–1914	–.0006	—	—	—	—
1790–1914	—	—	—	—	0.08
1792–1913/14	–.0002	.25	.00009 ^e	—	—
1890/92–1914	.53	—	.69	—	0.83
1914–50	4.58	—	20.22	3.07	2.37
1950–80	6.61	2.65	5.41	1.95	3.57
1970–80	14.2	5.1	8.08	3.39	7.82

^aThe index for 1860 has been calculated by using the change of the German index from 1850–51, since the base of the British index has been changed for that year.

^bAfter devaluation 1:10¹² in 1923.

^cAfter devaluation 1:10 in 1948.

^dIndex for 1796.

^eThe index for 1820 has been calculated by using the change of the German index from 1819–20, since the base of the French index has been changed for that year.

^fThe index number for 1914 set equal to that of Germany.

^gAverage annual inflation rate for 1798–1914.

SOURCES: Mitchell (1976, pp. 735–47); U.S. Dept. of Commerce (1975, Part 1, pp. 199–202); Statistisches Bundesamt (1981, pp. 704–707).

by a constitutional growth rule (Friedman 1968), introducing a commodity money (Yeager 1962), and instituting free banking with no governmental control (Hayek 1976). No agreement thus exists on the type of sound monetary constitution to be introduced. But as Geoffrey Brennan and James Buchanan (1981, p. 64) have emphasized: "The proponents of free market money, competitive monies, commodity money, or rule-constrained fiat issue all agree on the desirability, necessity, acceptability of some monetary constitution."

My discussion (Bernholz 1983) of the political and economic reasons for the inflationary bias of unrestrained government shows that this bias can only be contained for an extended period by adequate monetary constitutions.¹ The idea that sound monetary constitutions are necessary to limit the inflationary tendencies of unfettered government dates to at least 1800, and has been favored by many economists. To quote from Ludwig von Mises (1912, p. 288):

As soon as only the principle has been accepted that the state is allowed and has to influence the value of money, be it even only to guarantee its internal stability, then the danger of mistakes and exaggerations again at once emerges.

These possibilities and the memories of the financial and inflationary experiments of the recent past have pushed into the background the unrealizable ideal of a money with an unchangeable intrinsic value as compared to the postulate: that at least the state should refrain from influencing in any way the intrinsic value of money [my translation].

Even though the reasons for the inflationary bias of central banks and governments and the possible alternatives restricting them by sound monetary constitutions have been widely discussed by economists, little attention has been paid to an equally important problem. In particular, the problem of implementing and maintaining a sound monetary constitution, given the political forces working in favor of inflation. This paper, therefore, aims to treat the problem of how to introduce and to maintain a sound monetary constitution and to give some preliminary answers. Possible solutions to this problem may also bear on which monetary constitution to select. For example, a particular constitution may be judged excellent for its consistency and potential to prevent inflation and reduce the variance of real variables of the system, but if it cannot be introduced or maintained, then a more limited but still satisfactory alternative must be substituted.

¹See Frey and Schneider (1981) and Schmidt (1983) for the behavior patterns of independent central banks.

Returning to a Sound Monetary Constitution: Historical Patterns

Four distinct patterns emerge when looking for historical patterns of the introduction of sound monetary constitutions. These patterns can be categorized as follows: (1) the return to a stable monetary constitution following hyperinflation; (2) the restoration of a sound monetary constitution at the old (gold or silver) parity following periods of war, during which convertibility has been abolished; (3) the introduction or reintroduction of a sound monetary constitution at a lower parity following moderate inflation; and (4) the introduction of stable monetary systems occasioned by the example of such constitutions in other countries.

For the first two categories, there are certain public choice mechanisms that facilitate a transition to a sound monetary constitution. These will be discussed in the remainder of this section. In the following section, I focus on the third category, which is the most puzzling from a public choice perspective. The fourth category is not considered in this paper.

Restoration Following Hyperinflation

A return to sound monetary conditions is inescapable after a system has entered hyperinflation. Hyperinflation has to end in collapse and, consequently, either a reform or the replacement of the current money by commodity or foreign money has to take place. In organized modern states the reform alternative has usually been chosen.

It is well known that during a hyperinflation and even during an advanced inflation individuals reduce their real cash balances and no longer use money as a unit of account. The declining real stock of money leads to a liquidity crunch and reinforces the replacement of the national currency by foreign currencies and other stores of value. As a consequence, the government obtains fewer and fewer resources from inflating the money supply, while normal tax revenues decrease because of the misallocation of resources brought about by inflation and the lag in collecting and spending taxes. The fact that people have now learned about inflation checks any expansionary effect of increasing rates of inflation on the demand for labor. On the contrary, the disorganization and misallocation of resources leads to rising unemployment.

Given this situation, the governing party(ies) or the opposition can gain the support of a broad majority of voters by introducing a currency reform. At this juncture, faith in the government and the monetary authorities is absent. Thus the introduction of a new monetary

constitution, which at least appears to be a reliable safeguard against further inflation, is inescapable. Otherwise the reform will falter, as in the cases of the replacement of the assignats by the mandats in France or the Chinese currency reform of 1948 (see Table 2).

Restoration Following War

Turning to the second category—the restoration of the old parity after wars before or during which convertibility had been abolished—the question arises as to what political forces allow a return to a sound monetary constitution (usually to the gold or silver standard). The most important factor has been the perception that the war period was extraordinary and that with its end everything, including the currency and thus the monetary constitution, should return to normality. Obviously politicians responded to this widely shared feeling. National prestige also has played a part in resurrecting the old system and parity. A world power like Great Britain would have lost status had it not returned to the prewar parity after the Napoleonic wars and after World War I. Finally, for a world financial center like London, the absolute trustworthiness of a stable currency employed in worldwide contracts was essential. Competition with the emerging financial center of New York was also an important consideration after World War I (Kindleberger 1984, ch. 18).

Some political forces opposed the return to the old system and to prewar parity. Those dependent on export and import-competing industries were mostly against the deflation and the unfavorable exchange rates necessitated by the reform. The coal strike of 1925 and the general strike of 1926 in Great Britain show that forces are emboldened by the recession or depression that paves the way to the old parity. It is thus not surprising that David Ricardo and John Maynard Keynes favored the introduction of a lower parity (Ricardo at least under certain conditions). In contrast to Ricardo, Keynes preferred the replacement of the gold standard by a more discretionary system (Silberman 1924, pp. 437–38; Kindleberger 1984, pp. 337–42).

Since the strength of the social and political forces opposing reform is related to the necessary degree of disinflation, a return to the old parity is possible only if the devaluation of the currency and the rise in the price level are not far out of line with the cost and price levels of the main trading partners who have preserved or reintroduced the stable monetary constitution and the old parity. This view is confirmed by the League of Nations (1946, p. 92) report on the monetary experience of various countries following World War I:

Of the six countries which ultimately stabilized their currencies at the pre-war gold parity, five, namely Sweden, Norway, Denmark,

TABLE 2
CASES OF HYPERINFLATION AND STABILIZATION

Country	Inflation Period	Base Period	Increase over Base Period (multiple)		Highest Velocity of Circulation of Money	New to Old Currency Units (conversion factor)
			Money Stock	Price Level or Exchange Rate ^a		
Germany	1914-23	Jan. 1914	319.2×10^8 (Nov. 1923)	$7,330 \times 10^8$ (Nov. 1923)	22.96	1: (1×10^{12})
Hungary	1914-24	Dec. 1920	229.12 (July 1924)	488.61 (July 1924)	1.91	1: (15×10^3)
Hungary	1945-46	Dec. 1945	226.03×10^{11} (July 1946)	702.28×10^{22} (July 1946)	310.71×10^9	1: (828×10^{27})
Austria	1914-22	July 1914	2,526.24 (Aug. 1922)	5,932 (Aug. 1922)	2.35	1: (15×10^3)
Poland	1914- Jan. 1924	July 1919	60.05×10^3 (Dec. 1923)	264.08×10^3 (Dec. 1923)	4.40 ^b	1: (1.8×10^6)
China	1937- May 1949	Sept. 1945	302×10^6 (May 1949)	105×10^9 (May 1949)	347.68	1948, currency reform faltered; 1949, communist take-over.
France	1789- Mar. 1796	1790	89.49 (Mar. 1796)	255.3 (Mar. 1796)	2.85 ^b	1795, currency reform ^c faltered; return to gold standard.

^aExchange rate against U.S. dollar for Poland and against Dutch guilder for France.

^bCalculated using exchange rate.

^cA new money (mandats) was introduced in 1795.

the Netherlands and Switzerland, were neutral during the war and had been spared such fundamental dislocations of their national economies and finances as were experienced by most of the belligerent countries. All of them, including the United Kingdom, were countries whose currencies had not depreciated by more than one-half in relation to the dollar.

As the maxima of relative price indices show (Table 3), the countries with only relatively low maximal indices were the ones that did return to their prewar parities (cf. Table 4).

Economic and Political Characteristics of Moderate Inflation and Stabilization

All the cases belonging to the third category exhibit moderate inflation before the reintroduction of a sound monetary constitution. In contrast to the second category, however, some cases were not

TABLE 3
CASES OF MODERATE INFLATION AND STABILIZATION AT THE
PREWAR PARITY

Country	Period of Inflation before Stabilization	Maximum of Domestic over Foreign Price Level ^a	Year of Maximum
Sweden	1750-1772	200 ^b	1764
Great Britain	1797-1823	143 ^c	1813
United States	1861-1879	174 ^b	1864
Great Britain	1914-1925	129	1921
Netherlands	1914-1924	233	1918
		160 ^d	1919
Sweden	1914-1922	141	1921
Switzerland	1914-1924	135	1919
Norway	1914-1928	165	1921
Denmark	1914-1926	139	1921

^aNormal = 100 for base year.

^bIndex for domestic price level only.

^cWholesale price indices.

^dThe relative cost of living index seems to be rather high for 1918; hence, the highest value for the years after World War I (up to 1924) has also been given.

SOURCES: Table 1 and Appendix Tables A1-A6; Bernholz (1982).

connected with wars and all of them restored a lower parity than the old one. These two facts are not unconnected. In the absence of an earlier war, no perceived necessity was felt to return to normalcy after an extraordinary period and to restore national prestige to its former status. Given these facts, why has it been possible to reintroduce sound monetary constitutions after moderate inflation not connected with wars? Why could stable monetary constitutions with a lower than the old prewar parity be introduced, given the fact that a restoration of the old parity was politically not possible?

The answer is that the same political forces that opposed a return to prewar parity in cases of the second category favored a restoration of a sound monetary constitution in cases of the third category. And in those third-category cases connected with wars, political forces were strong enough to prevent a return to the old parity because inflation had risen to such levels that a drastic disinflation would have been required. Indeed, Table 4 shows that the relative cost of living index for third-category cases moved to higher levels in the case of war-connected inflations than for second-category cases (cf. Table 3). To understand the political forces leading to a sound monetary constitution in cases of the third category, it is necessary initially to discuss the economic and political characteristics connected with moderate inflations and their stabilization.

If, after a long period of monetary stability, a country enters a path of moderate inflation, its initial impact is on demand in goods and labor markets, in the form of increasing incomes and perhaps, through some early bottlenecks in one or the other sector of the economy, a few rising prices. But no general rise of the price level is perceived or expected in this early stage of moderate inflation. Consequently, demands for compensating wage increases are slow to come. All these facts are usually reflected in the statistical observation that the price level is increasing less strongly than the nominal stock of money, if there has been no prior inflationary experience in the country during the last generation (cf. Appendix Tables A2, A4–A6).

Whereas domestic prices and wages react slowly in the early years of a new and moderate inflation, foreign exchange rates move up more rapidly and strongly, even if they usually first lag the movement of the money stock. Exchange markets are better organized and market participants are usually better informed about changes affecting the whole economy. It follows that the beginning of a moderate inflation (if it is relatively higher than that of the trading partners) leads to an undervaluation of the currency compared to other currencies. Consequently, export industries benefit from prices (expressed in domestic currency) that have increased more strongly than the

TABLE 4
 CASES OF MODERATE INFLATION AND STABILIZATION AT A LOWER PARITY

Country	Period of Inflation before Stabilization	Maximum of Domestic over Foreign Price Level ^a	Year of Maximum
Netherlands	1864–1875. No real inflation. Fall of silver price leads to abandonment of silver standard (1873) and adoption of gold standard (1875).	103.58 ^b	1873
Austria- Hungary	1864–1896. No real inflation. Fall of silver price leads to denial of private rights to demand minted silver coins at parity (1879) and to adoption of gold standard (1892/96).	130 ^c	1887
		121 ^d	1890
		144 ^e	1896
Argentina	1884–1899	255 ^f	1891
		161 ^g	1896
Czechoslovakia	1914–1927	818	1921

France	1914–1928	290	1916
Belgium	1914–1927	459	1927
Poland	1914/1924/–1927. Stabilization after hyperinflation (1924), and second stabilization after moderate inflation (1926).	235.10	Dec. 1924

^aNormal = 100 for base year.

^bPrice of silver in London in terms of gold. This price fell further after 1873 (see Appendix Table A1), so fears of future devaluation and inflation were justified had the Netherlands remained on a silver standard.

^cMaximum of relative prices until 1892, the year of the currency reform (see Appendix Table A1).

^dLowest relative price between 1892 and 1896.

^eMaximum for 1864–1904 period (see Appendix Table A1). In 1896 the new gold parity became effective in setting a lower limit to the value of the Austrian guilder.

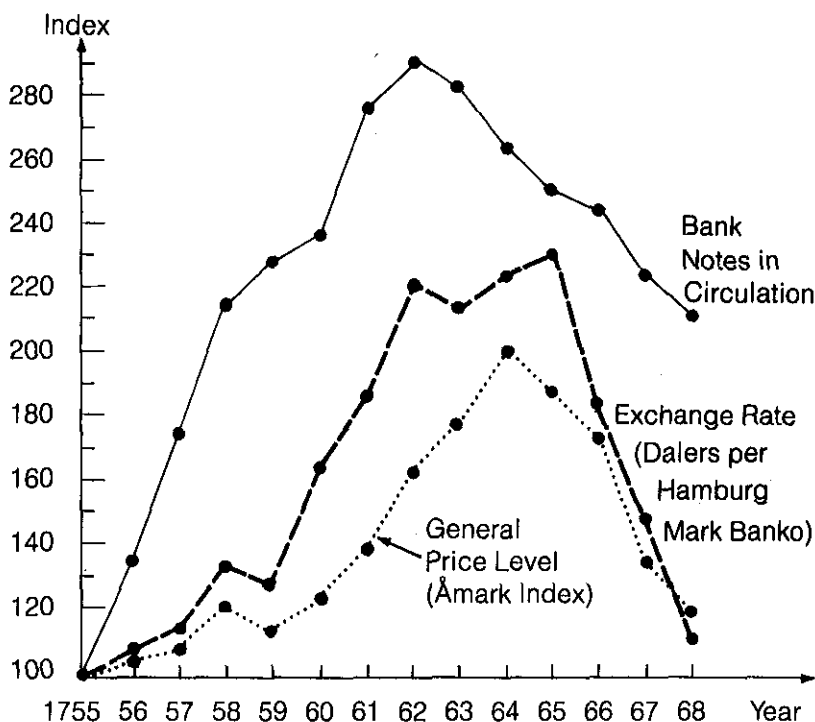
^fIndex for domestic price level only, as measured by export price index (see Appendix Table A2).

^gIndex for domestic price level only, as measured by Wage Index (see Appendix Table A2).

SOURCES: Table 1 and Appendix Table A1–A6; Bernholz (1982).

prices of most of their inputs. Similarly, import-competing sectors of the economy enjoy better competitive positions in domestic markets than before the inflation. On the other hand, the stronger rise of import prices than of the prices of goods produced at home leads to a positive feedback effect on inflation, a kind of "imported inflation." These relationships are rather long lasting, as can be seen from Figures 1 and 2 and Appendix Tables A2, A4–A6. Moreover, they seem to occur in most historical cases. The same is true for the qualitative characteristics associated with stabilizing moderate inflations relative to important trading partners.²

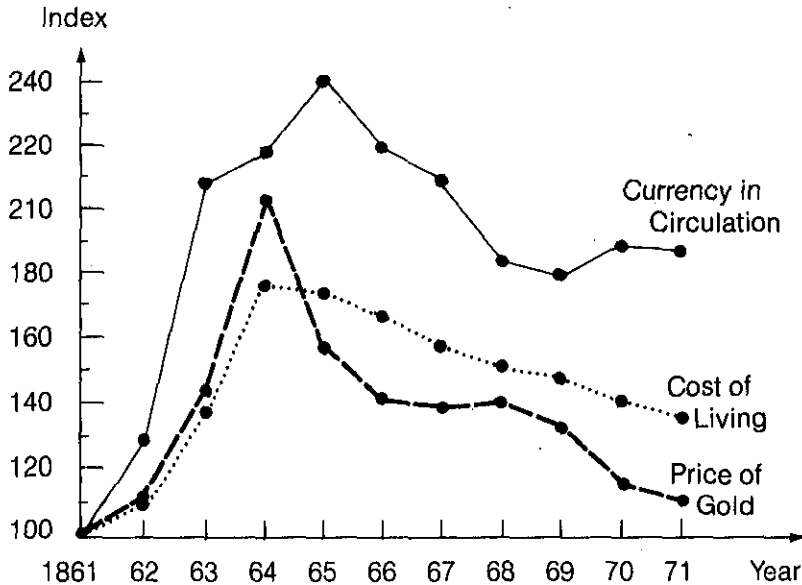
FIGURE 1
INDICES OF MONEY SUPPLY, PRICES, AND EXCHANGE RATES IN
SWEDEN, 1755–68



SOURCE: Eagley (1971, pp. 115–17).

²For a fuller description of these qualitative characteristics and other historical evidence for 17 cases see Bernholz (1982) and Bernholz, Cärtnér, and Heri (1985). The latter article also presents a model that attempts to explain these characteristics.

FIGURE 2
INDICES OF MONEY SUPPLY, PRICES, AND PRICE OF GOLD IN THE
UNITED STATES, 1861-71



SOURCES: For money-supply and cost-of-living indices, U.S. Dept. of Commerce (1975, Series X, Part 2, p. 993, and Series E, Part 1, p. 212); for gold-price index, Mitchell (1908, Table 1, p. 4).

Stabilizing inflation relative to another country requires reducing the growth of the domestic money stock, at least compared with that of any given trading partner. Such a development took place in all cases shown in Figures 1 and 2 and Appendix Table A2. The respective reference countries were either on a pure gold standard or the gold premium itself was used to measure the movement of the exchange rate. Also, in the cases shown in Appendix Tables A4 and A6, the indices for the ratios of the money stocks fell, or at least did not increase, for some years. Although in the case of Belgium (Appendix Table A5) the annual figures do not show this movement, it is visible in the monthly figures for the second half of 1926.

The consequences of the relative stabilization of the money stock are shown in the respective figures and tables. First, the real stock of money moves back toward normal. The index for the price level is in accord with the index for the nominal stock of money. Second, the exchange rate falls more strongly than the price level, which still

may be increasing. Undervaluation of the currency vanishes, and purchasing power parity is nearly restored. In fact, even some overvaluation may result. These facts depict nothing other than a kind of stabilization crisis. Export and import-competing industries lose accustomed advantages of undervaluation and may even be hurt by some overvaluation. The disinflationary impact of the decrease in the growth rate of the money stock is reinforced by the downward movement of foreign exchange rates. How strongly these consequences will spread to other sectors of the economy depends on overall economic conditions.

The experience of the U.S. economy between 1973 and 1985 provides a good illustration of such stabilization (Corden 1984). First, the U.S. inflated more strongly than, say, Germany or Switzerland. As a consequence the values of the mark and Swiss franc increased much more than the relative U.S. cost of living index. However, when relative stabilization occurred in the United States, these exchange rates dropped, whereas the cost of living index increased further, though at a slower rate. Undervaluation of the dollar eventually turned into an overvaluation.

The political consequences of such recent developments in the United States are representative for the historical cases discussed here. Export industries, import-competing industries, and their employees feel the disciplining forces of foreign competition—of shrinking sales, profits, and employment. As such, interest groups feel pressure to increase their lobbying for protection from foreign competition, for price supports and/or subsidies. Politicians respond to those pressures in the hope of gaining or preserving the votes of people employed in those sectors of the economy. Although consumers will be hurt by trade restrictions, the costs are widely dispersed and usually are not associated with the protective political actions. An exception occurs if the expenditures for a given good (say, automobiles) amount to a substantial share of household expenditures in which cases it may pay for consumers to inform themselves and thus for politicians to be reluctant or unwilling to adopt trade restrictions (see Bernholz 1966).

Establishing a Sound Monetary Constitution after Moderate Inflation

What is the influence of the relationship just sketched on the possibility of introducing a sound monetary constitution after a moderate inflation? The sectors hurt by disinflation—certainly the export and import-competing industries and the people employed by them—

will soon exert pressure for protective legislation and administrative intervention. The accustomed benefits of undervaluation decrease and may even change into the competitive disadvantages of overvaluation as a result of the stabilizing measure.

Given this situation, governments can take quite different measures. For example, intervention could take the form of protective tariffs, import quotas (perhaps agreed on with foreign countries), and anti-dumping duties, or it could take the form of interventions in foreign exchange markets combined with an increase of the money supply. Interventions of this latter kind were pursued by the German Bundesbank and the Swiss National Bank in 1978 and by the British Exchange Equalization Account after April 1932 to depress the external value of the pound (see Kindleberger 1984, pp. 382–84).

Another possible course of action would be to introduce a stable currency with a fixed but still undervalued exchange rate. Such a proposal would readily gain support from export and import-competing industries, which would be hurt by further strengthening of the foreign exchange rate and thus a loss of undervaluation. In fact, export industries would prefer this over import duties and import quotas. And such stabilization would also be judged by export and import-competing industries to be preferable to subsidies. Moreover, politicians could even boast that they had finally provided an inflation-proof currency.

It remains to be shown that the foregoing factors were, in fact, instrumental in creating the sound monetary constitutions found in cases of the third category, that is, in episodes following moderate inflations. Argentina in the 1890s is a case not connected with war (see Bernholz 1984). After years of inflation and mounting foreign debts that were used to finance an unsustainable development boom, a general collapse in 1890 resulted in the Baring Crisis in London. The Argentinean national government, its 14 provinces, and many municipalities defaulted. Bank runs in 1891 ended with the liquidation in April of the Banco Nacional and the Bank of the Province of Buenos Aires. The panic reached its highwater mark that summer, and a general moratorium was declared from July 4 to October 18.

The situation swiftly turned around after the stabilizing measures were taken. The Rothschild Committee and the Argentinean federal government agreed on the following measures: a moratorium on the payment of foreign debt for several years; a funding loan of £15 million; no new foreign debts to be incurred by the Argentine government and no increase in national obligations in any arrangements with the provinces; and a reduction by the government of the stock of bank notes in circulation. The consequences of these measures

and the earlier developments are shown in Appendix Table A2. Undervaluation of the peso was an obvious consequence of the inflation and, after stabilization, the rate of undervaluation declined. Agriculture and such new domestic industries as sugar, paper, and textiles, which had been stimulated by the undervaluation, were hurt by this reversal.

In this situation, in which a further revaluation of the peso or even an overvaluation were expected, banker Ernesto Tornquist proposed in 1898 to return to the gold standard and to fix the exchange rate between paper and gold at a parity of 2.5:1. His suggestion was taken up by the government and passed by Congress in 1899, and was known as the Conversion Law.³ This law fixed parity at 227.27 paper pesos for 100 gold pesos. At this parity the *Caja de Conversion* was obliged to exchange gold against paper in unlimited amounts. Scarcely any gold was available to secure the conversion of paper pesos into gold, but this really did not matter, since parity had been fixed at an undervalued level. Thus a balance of payments surplus resulted, gold had to be bought with paper money to maintain the parity, and the amount of paper money in circulation increased (see Appendix Table A3). By 1914 Argentina enjoyed the highest per capita gold stock in the world.

France is another case of the (re)introduction of a gold standard. Inflation and undervaluation, compared with the U.S. dollar, resulted from events of World War I (Appendix Table A4). Finally, after a renewed crisis, especially in foreign exchange markets, the new Poincaré government eliminated the low fixed interest rate on floating debts, increased taxes, cut expenditures, and began to refund the floating debt. Bank notes in circulation were reduced from 56 billion francs in July 1926 to 52.8 billion a year later. Consequently, the dollar exchange rate fell from an index value of 793.3 in July 1926 to 487.4 in January 1927, and French undervaluation rapidly dwindled.

Political forces in France, however, began to operate, limiting the revaluation of the franc. According to Charles Kindleberger (1984, p. 358):

³President Roca's message accompanying the Conversion Law revealed the government's motivations for currency reform:

[T]he instability of all values caused by the rapid increase of the values of the paper currency . . . strongly damages our most important branches of production. . . . These disadvantages are especially felt by the producers and manufacturers. The rise in the value of the currency changes the economic conditions under which we have lived for years, and disturbs the equilibrium of the value relationships, especially between wages, rents and production costs, which are changing extremely slowly, and the prices of products following world market prices [Quoted from Wolff 1920, pp. 56–57, my translation].

[P]ressure began to come from businessmen, especially in the exporting automobile industry, not to let the rate get too high. In its report of 3 July, the Committee of Experts had warned against a high rate (of exchange or parity) which would produce a deflation like that being experienced in Britain. . . . In November, when Léon Juhaux, head of the Confédération Générale de Travail, the national trade-union federation, protested about rising unemployment in export industries, the franc was stabilized *de facto* at close to the rate recommended by Rueff, 124 francs to the pound and 25.51 to the dollar. . . . At this rate, however, the franc was seriously undervalued.

When stabilized the franc was indeed undervalued. The return to the gold standard in June 1928 did not change the *de facto* parity established in 1927. Thus the balance of payments remained in surplus for years, and gold and foreign exchange reserves, bank notes in circulation, and the price level all increased until 1933 (Appendix Table A4).⁴

Similar developments took place in Belgium, Poland, and Czechoslovakia at about the same time (Appendix Tables A5–A7). The return to the gold standard at undervalued parities took place in these countries with results similar to those for France. Belgium, however, allowed the index of the exchange rate for the dollar to drop only from 794 in July 1926 to 693.96 in October—much less than the decline of the French franc vis-à-vis the dollar. In Czechoslovakia, on the other hand, the index of the exchange rate decreased even more than in France, namely, from 1,628 in 1921 to 691 in 1923, when stabilization occurred. In Poland a second stabilization took place in 1926, after a new moderate inflation had followed the 1924 stabilization of the hyperinflation. Obviously the new exchange rate fixed at 8.917 zloty per U.S. dollar (the rate selected in 1924 was 5.184 zloty per dollar) was undervalued and, until 1928, led to a substantial increase of gold and foreign exchange reserves (see Appendix Table A7 and League of Nations 1946, pp. 108–11).

Patterns fitting into the third category are also found in the cases of Austria-Hungary (1872–92, see Appendix Table A1) and the Netherlands (1864–75).⁵ Although the movements of exchange rates were very small, they led to strong political reactions. For example, the

⁴For other accounts of the Poincaré stabilization in France, see Sargent (1983) and Makinen and Woodward (1985).

⁵See Mises (1907, 1912) for a pioneering discussion of these cases along the lines of the present paper. Also, on the case of the Netherlands, see the early work of Ludwig Bamberger (1876), Ottomar Haupt (1886), and P. Kalkmann (1901). These studies demonstrate that in the history of economic thought, the discovery of certain relationships has often shown that similar facts were already stated by pioneers in earlier cases.

value of the Austrian guilder in pound sterling increased by merely 8.4 percent between 1886 and 1891 (see Appendix Table A1). The movement of the real exchange rate was somewhat stronger, 14.6 percent, from 1882 to 1891 (if the figures can be trusted), but even this figure is small compared with today's standards. The movement of the Dutch exchange rate that led to the currency reform of 1875 was even less pronounced, at 3.1 percent. One explanation of why such small movements of exchange rates were able to generate such strong political reactions is that people in the latter half of the 19th century were accustomed to relative monetary stability and therefore were quite sensitive to inflationary pressures. Moreover, Mises (1907, pp. 561–62) points out that all experts expected a further revaluation of the Austrian guilder: "The generally shared belief in a persistent 'advance' of the Austrian currency was one of the most effective motives for the rapid beginning of the reform" (also see Menger 1892).

The introduction of the gold exchange standard in British India seems to have followed the same pattern as in Austria-Hungary and the Netherlands. The colonial government ended silver convertibility in June 1893, after the exchange rate of the Indian rupee had fallen from 22.5 pence sterling in 1873 to 14.625 pence in May 1893. At the same time the government announced that it would buy gold in any amount against rupees at 16 pence per rupee, but would not buy rupees with gold. Given that the fall of the rupee was the result of the declining price of silver, it is remarkable that the new parity was not set higher, and that no convertibility of the rupee into gold was guaranteed. It is at least probable (though I lack direct evidence) that even the colonial government took into account the interests of export and the import-competing industries (Heyn 1904).

After the termination of silver convertibility, the exchange rate of the rupee fluctuated for some time and reached a low of 12.5625 pence sterling in January 1894. But it became obvious that an undervalued gold parity had been selected as the upper limit for the value of the rupee. After 1898 the exchange rate reached 16 pence, and it remained a little above this parity only because of government intervention (Heyn 1904, pp. 163–65). Gold and sterling exchange reserves were accumulated, and the balance of payments showed a surplus (Heyn 1904, pp. 314–15).

It is perhaps revealing that legislation in Austria-Hungary (1892), in the Netherlands (1875), and in British India (1893) merely set an upper limit on the parity for the value of the domestic currency. Only the purchase of gold against domestic currency was guaranteed by

law at the legal parity.⁶ In Austria-Hungary full de facto convertibility was reached only when the Austrian-Hungarian bank began, in 1896, to follow the initiative of the government and the wishes of the business world and sell gold at the new parity (Mises 1907, p. 582). The political situation in the Netherlands and India was probably similar. The Bank of the Netherlands as early as 1875 began to sell gold at 1,653 guilders per kilogram of fine gold (Kalkmann 1901, p. 56). Finally, the British Indian government, too, was ready if not legally bound to exchange rupees into gold at parity in 1899 (Heyn 1904, p. 316).

Why Stabilization after Moderate Inflation?

The historical evidence clearly shows that the introduction of sound monetary constitutions is politically feasible if stabilizing measures have been undertaken following moderate inflations. It is, however, not clear why stabilization was undertaken at all, given the opposing political forces.

We have discussed the reasons for stabilizations following abnormal periods of war (cases of the second category), but how can we explain the stabilizations that occurred following moderate inflations and the absence of wars? The Dutch and Austrian guilders and the Indian rupee decreased externally because of the fall of the price of silver. In the case of Argentina, inflation and foreign credit supported a development boom that led to a liquidity and credit crisis. None of these factors had anything to do with war. Thus other political factors must have been at work permitting a move toward stabilizing fiscal and monetary policies.

The realization that the inflationary process is, or may be, getting out of control is a major force working against expansionary policies. As the inflation proceeds, a larger number of people, including wage-earners and their unions, will correctly perceive inflation. Consequently, spending increases, bottlenecks develop, and workers and unions begin to include the expected rate of inflation in their wage demands. *Once this happens, the political benefits from inflation—namely, lower unemployment and greater tax receipts—begin to fade while the costs of inflation become more pronounced, as creditors*

⁶As Mises (1907, pp. 581–82) explained:

[I]t seems as certain that the victory of the reform project was assisted by just the fact that accepting the bills of the government only prohibited, at the moment, a further increase of the value of the currency and that the chance of its eventual decrease, if such existed, was left open. By agreeing to the currency reform the friends of easy money lost nothing but gained much, namely, the fixation of an upper limit for the value of the currency.

and those with relatively fixed incomes suffer real-income losses. Government officials and opposition leaders then find it politically rewarding to propose and enact anti-inflationary measures. A comparison with other countries that have greater monetary stability may also engender a widespread public belief (which politicians find it beneficial to respond to) that a stabilization policy is necessary. The prevention of capital flight, moreover, induced by outside stability, may be an additional motive to turn away from inflationary policies.

Although stabilization efforts may be expected after the main advantages of moderate inflation have been exhausted, this does not mean that politicians will persist in stabilization efforts until an inflation-free situation has been reached. Indeed, as we have shown, disinflation itself awakens political forces opposing further pursuit of stabilization policies. Thus, another turnaround may be expected if the propitious moment of mounting pressures on export and import-competing industries is not used to introduce a sound monetary system posited on conditions acceptable to the political forces opposing further stabilization. If this opportunity is missed a further round of expansionary and/or protectionist policies can be expected. These hypotheses have ample support, especially in Latin America (Paldam 1985) and, for the last several decades, also in Western industrialized countries (see Table 1). After the first turnaround, an even higher level of inflation is often reached, since the expansionary process begins from an inflationary base that is already established. Hence, economic systems giving discretionary powers to governments or central banks can never be inflation-free in the long run.⁷

The Maintenance of Monetary Stability

Long-term monetary stability—an inflation-free monetary system—can be maintained only if politicians and central bankers have no discretionary authority to influence the stock of money. No currency in history has ever maintained its long-term stability without constitutional constraint. History also shows, however, that even the best monetary constitutions cannot be maintained indefinitely. Periods of a century or more of price stability have been experienced only by several countries during the 19th century, and therefore seem to be rare accomplishments. Moreover, major wars have always been the biggest danger for the survival of sound monetary constitutions.

⁷This statement does not deny that independent central banks are more likely to produce lower rates of inflation than dependent central banks. Both, however, operate subject to the economic demands of political forces and so will, at best, be able to maintain a low average rate of inflation but never an inflation-free system.

What can be hoped for given these observations? First, apart from avoiding major wars, the rare opportunities for introducing sound monetary constitutions must be seized with courage and determination. Furthermore, to implement and maintain a constitution with characteristics best suited to prevent inflation over the long run, a concrete plan has to be present at the right moment. Such a plan should include the following six measures:

1. A constitutional restriction on the power of governments to create budget deficits;
2. A constitutional safeguard that prevents governments and central bankers from influencing the stock of money;
3. A mechanism limiting the stock of money;
4. A requirement that the monetary constitution can be amended only by qualified majorities, say, by two-thirds in both chambers;
5. An obligatory popular referendum to validate all changes of the monetary constitution passed by qualified majorities;
6. No emergency clauses empowering the cabinet to make changes under certain conditions.

The enactment of these measures would narrowly limit discretionary policy, but they are not sufficient to control inflation. The pure gold and silver standards had one clear advantage. The rule of convertibility of bank notes against the precious metal and vice versa, at a fixed parity, could always be tested by everybody and could not be easily reinterpreted by governments, central banks, or supreme courts. The latter condition would not be true for a constitutional rule prescribing, say, an annual monetary growth rate of 2 or 3 percent. First, the public would neither be able to test the rule nor determine if it had actually been followed. Second, it would be difficult to decide which monetary aggregate should grow by which percentage in which period against which base. Here there would be ample room for various interpretations, so that the constitutional rule would be of little value if it were not clearly defined. True, it would not be impossible to define the monetary aggregate, the base, and the relevant period in the constitution. But what would happen if the money aggregate selected became less and less relevant because of financial innovations? Moreover, the observance of the rule could still not be monitored by the public. Who should control the central bank? Another government agency? Or would individual persons have a right to sue government or the central bank for violating the rule?

Stabilizing a weighted price index would lead to similar problems. The prices and thus the index could be manipulated by the government. And if the weights and commodities of the basket were fixed

in the constitution they might lose their relevance over time, because of substitution and other factors.

Given these difficulties, there seems to be good reason to favor a simple monetary arrangement such as the pure gold standard. To return to a gold standard, however, would require greater flexibility than prevailed before World War I to prevent the higher variance of real variables, as mentioned in the first section of this paper. Moreover, during World War I no European country with notes issued by the government or a central bank monopoly maintained the gold standard. This was true even for neutral countries. Only Albania, which had neither government notes nor a central bank, stayed on the gold standard (League of Nations 1946, p. 93). Albania is perhaps not a good example, but it seems that only a removal of the monetary system from the sphere of the state may be sufficient to maintain a stable monetary constitution under adverse conditions.

My own tentative proposal to solve these problems would be to abolish the central bank, institute a pure gold standard, and allow free banking. The monetary constitution would only postulate that each creditor had the right to demand payment from each debtor in gold at the fixed parity. Any violation of this rule would be severely punished by private and/or public law. Moreover, the constitution would grant the right of any bank fulfilling certain conditions—including unlimited liability of its shareholders—to issue bank notes and to create any type of claim preferred. Finally, any government owned or controlled banks would be outlawed by the constitution.

These are radical proposals. But the Scotch free banking system combined with the gold standard seems to have worked quite well without a central bank as a lender of last resort (White 1983). And the Swiss system seems not to have experienced too many problems before the foundation of the national bank in 1907. But the most important feature of the proposal would be the complete removal of government influence from the monetary system and the opening up of the path of innovation in the field of money.

MONETARY CONSTITUTION

APPENDIX TABLE A1

MONEY, PRICES, AND EXCHANGE RATES IN AUSTRIA-HUNGARY

Year	P _s ^a	M ^b	CPI ^c	PI ^{*d}	CPI	ER ^e	CPI
					PI*		PI*·ER
1864	100		100	100	100	100	100
1865	99.94		92.01	98.32	93.58	93.97	99.59
1866	99.59	100	91.58	100.84	90.82	103.74	94.80
1867	98.68	110	91.14	99.16	91.91	108.61	84.63
1868	98.57	115	89.31	96.64	92.42	100.44	92.01
1869	98.47	120	91.04	89.92	101.25	106.69	94.90
1870	98.68	130	93.95	92.44	101.63	106.94	95.04
1871	98.57	138	96.87	96.64	100.24	104.68	95.76
1872	98.27	139	103.89	107.56	96.59	95.29	101.36
1873	96.54	141	106.16	106.72	99.48	95.74	103.90
1874	95.01	128	104.86	101.68	103.13	95.71	107.75
1875	92.67	127	101.62	98.32	103.36	96.40	107.22
1876	85.95	130	100.11	96.64	103.59	104.62	99.02
1877	89.31	126	100.43	92.44	108.64	105.40	103.08
1878	85.64	131	96.54	84.87	113.75	101.64	111.92
1879	83.50	126	96.44	82.35	117.11	100.55	116.47
1880	85.13	131	96.98	85.71	113.15	101.59	111.38
1881	84.22	135	95.03	83.19	114.23	101.65	112.38
1882	84.11	144	94.28	84.87	111.09	103.14	107.71
1883	82.38	146	93.95	84.87	110.70	103.52	106.93
1884	82.48	146	92.87	79.83	116.33	105.16	110.63
1885	79.22	140	89.42	73.95	120.92	107.78	112.19
1886	73.87	143	86.39	69.75	123.86	109.16	113.46
1887	72.68	146	88.55	68.07	130.09	107.10	121.46
1888	69.59	153	87.26	70.59	123.61	103.07	119.93
1889	69.62	158	88.66	70.59	125.60	103.07	121.85
1890	77.72	163	88.77	73.11	121.42	100.05	121.36
1891	73.42	167	89.20	72.27	123.43	100.70	122.57
1892		173 ^f	84.88	68.91	123.18	102.87	119.74
1893			85.42	68.91	123.96	106.73	116.14
1894			84.88	62.18	136.51	107.50	126.98
1895			86.93	60.50	143.69	105.13	136.67
1896			83.37	61.34	135.91	103.60	131.19
1897			84.02	62.18	139.12	103.24	130.88
1898			84.67	65.55	129.17	103.76	124.49
1899			86.39	70.59	122.38	104.05	117.62
1900			86.82	76.47	113.53	104.41	108.74
1904		228 ^f	88.34	69.75		105.24	120.35

^aPrice of silver in pence sterling.

^bBank notes and government notes in circulation.

^cCost of living index in Austria.

^dRousseaux' overall price index for Great Britain.

^eExchange rate, Austrian guilders per £10 sterling.

^fRough estimate.

SOURCES: P_s and ER until 1885: Soetbeer (1886); P_s and ER, 1886-91: Menger (1936, pp. 259-61); M until 1891: Lexis (1893), for later years: Mises (1907); ER from 1892-1904: Kaiserliches Statistisches Amt (1903); CPI: Oesterreichisches Statistisches Zentralamt (1979, pp. 676-79); PI*: Mitchell (1962).

APPENDIX TABLE A2

PAPER MONEY IN CIRCULATION, BORROWINGS ABROAD, PRICE
OF GOLD PESOS, EXPORT PRICE AND WAGE INDICES IN
ARGENTINA, 1884-1900

Year	Paper Money in Circulation ^a	Borrowings Abroad ^b		Price of 100 Gold Pesos ^c	Export Price Index	Wage Index
		Public	Total			
1884	61,739		39,732	100		
1885	74,820		38,732	137		
1886	89,198	41,587	67,580	139	100	100
1887	94,071	45,548	153,498	135	97	
1888	129,505	91,760	247,796	148	93	
1889	163,648	30,833	153,612	191	118	
1890	245,101	11,420	45,395	251	165	125
1891	261,408	2,506	8,242	387	255	
1892	281,609	0		332	232	138
1893	306,743	0		324	207	
1894	298,703	0		357	209	146
1895	296,743	0	184,106	344	216	
1896	295,166	0	(annual	296	204	161
1897	292,704	0	average:	291	179	
1898	292,047	0	20,460)	258	177	
1899	291,342	0		225	138	
1900	295,166	0		231	154	

^aMillions of paper pesos.^bMillions of gold pesos.^cIn paper pesos.

SOURCE: Williams (1920).

APPENDIX TABLE A3
ARGENTINEAN BALANCE OF PAYMENTS, 1884-1904 (MILLIONS OF GOLD PESOS)

<i>Year</i>	<i>Exports</i>	<i>Imports</i>	<i>Balance of Trade^a</i>	<i>Borrowings</i>	<i>Interest</i>	<i>Balance of Borrowings^b</i>	<i>Balance of Payments^c</i>
1884	68,030	94,056	-26,026	39,732	27,574	12,158	-13,856
1885	83,879	92,222	-8,343	38,732	22,637	15,522	6,179
1886	69,835	95,409	-25,574	67,580	26,764	40,816	15,242
1887	84,422	117,352	-32,930	153,498	37,305	116,193	83,263
1888	100,112	128,412	-28,300	247,796	49,523	198,273	169,973
1889	90,145	164,570	-74,425	153,612	59,802	93,810	19,385
1890	100,819	142,241	-41,422	45,395	60,241	-14,846	-56,268
1891	103,219	67,208	36,011	8,242	31,575	-23,333	12,678
1892	113,370	91,481	21,889	—	—	-15,873	6,016
1893	94,090	96,224	-2,133	—	—	-20,130	-22,263
1894	101,688	92,789	8,889	—	—	-30,577	-21,688
1895	120,068	95,096	24,971	17,197	38,149	-20,952	4,019
1896	116,802	112,164	4,638	37,144	39,863	-2,719	1,919
1897	101,169	98,289	2,880	38,295	43,985	-5,690	-2,810
1898	133,829	107,429	26,400	46,063	50,530	-4,467	21,934
1899	184,918	116,851	68,067	24,966	54,698	-29,732	38,335

APPENDIX TABLE A3 (*cont.*)
 ARGENTINEAN BALANCE OF PAYMENTS, 1884–1904 (MILLIONS OF GOLD PESOS)

Year	Exports	Imports	Balance of Trade ^a	Borrowings	Interest	Balance of Borrowings ^b	Balance of Payments ^c
1900	154,600	113,485	41,115	27,540	58,575	– 31,033	9,082
1901	156,716	113,960	42,756	—	—	—	—
1902	179,487	103,344	76,143	—	—	—	—
1903	220,985	131,207	89,778	—	—	—	—
1904	264,158	187,306	76,852	—	—	—	—

^aExports minus imports.

^bBorrowings minus interest.

^cBalance of trade plus balance of borrowings.

SOURCES: 1884–1900: Williams (1920); 1901–1904: Wolff (1905).

APPENDIX TABLE A4

MONEY SUPPLY, COST OF LIVING, AND EXCHANGE RATES:
FRANCE RELATIVE TO UNITED STATES, 1914-34

Year	M ^a	CPI ^b	M ^{*c}	CPI ^{*d}	<u>M</u> M [*]	<u>CPI</u> CPI [*]	ER ^e	<u>CPI</u> CPI [*] ·ER	Gold and FE ^f
1914	100	100	100	100	100	100	100	100	100
1915	168	120 ^g	96	104	175	115.38	107.58	107.25	—
1916	212	129 ^g	105	118	202	109.32	113.73	96.12	—
1917	257	138 ^g	113	142	227	97.18	111.50	89.88	—
1918	376	206 ^g	127	174	295	118.39	108.61	109.00	—
1919	474	238	141	177	336	134.46	140.57	95.65	—
1920	521	342	157	217	332	157.60	278.90	56.51	114.79
1921	514	309	142	180	362	171.67	260.10	66.00	108.61
1922	496	296	129	167	384	177.25	237.90	74.51	108.24
1923	510	334	138	170	370	196.47	320.10	61.38	109.66
1924	545	369	139	169	395	218.34	373.00	58.54	109.55
1925	602	400	138	174	436	229.89	405.02	56.76	109.68
1926	716	505	142	174	504	290.22	595.59	48.73	115.35
1927	731	514	138	170.31	530	243.09	491.64	49.44	160.55
1928	872	519	138	168.13	632	308.70	490.20 ^h	62.97	338.16

APPENDIX TABLE A4 (cont.)
 MONEY SUPPLY, COST OF LIVING, AND EXCHANGE RATES:
 FRANCE RELATIVE TO UNITED STATES, 1914–34

Year	M ^a	CPI ^b	M* ^c	CPI* ^d	<u>M</u> M*	<u>CPI</u> CPI*	ER ^e	<u>CPI</u> CPI*·ER	Gold and FE ^f
1929	936	556	134	167.63	699	331.68	492.11	67.40	353.82
1930	1043	582	134	161.26	778	360.91	491.08	73.49	417.39
1931	1170	569	157	145.34	745	391.50	491.37	79.68	477.48
1932	1160	526	158	130.25	734	403.84	490.39	82.35	465.59
1933	1128	520	162	125.39	696	414.71	492.26	84.25	416.93
1934	1116	516	200	133.10	558	387.68	491.81 ⁱ	78.83	—

^aBank notes in circulation in France.

^bFrench consumer price index.

^cCurrency held by public plus demand deposits in United States, end of year.

^dU.S. consumer price index.

^eExchange rate, francs per dollar.

^fForeign exchange reserves.

ⁱIndex for food only.

^hOn 25 June 1928 France returned to a fixed gold parity that was equivalent to a U.S. dollar parity of 25.52 francs per dollar. The index figure is an average of the first half of the year up to this date.

ⁱOn 30 June 1934 the devaluation of the U.S. dollar in terms of gold led to a new parity of 15.075 francs per dollar. The index figure for 1934 is given in terms of an unchanged parity. Taking the change into account leads to an index figure of 290.52. Thus the franc was still undervalued before but overvalued after the devaluation of the dollar.

SOURCES: Statistisches Reichsamt (1921–22, 1924–25; 1936).

APPENDIX TABLE A5

MONEY, PRICES, AND EXCHANGE RATES IN BELGIUM, 1913-33

Year	M ^a	M ^{*b}	M		CPI		ER ^e	CPI		Gold & FE ^f
			M*	CPI ^c	CPI ^{*d}	CPI*		CPI*	CPI*·ER	
1913	100	100	100	100	100	100	100	100	100	100
1919	534	141	379	390	156	250	—	—	—	78
1920	537	159	338	455	200	228	263	87	87	71
1921	613	144	426	400	174	230	259	89	89	69
1922	643	131	491	374	169	221	252	88	88	69
1923	700	139	504	428	173	247	370	67	67	69
1924	763	141	541	501	172	291	416	70	70	73
1925	757	142	533	533	178	299	406	74	74	73
1926	841	143	588	639	176	363	589	62	62	185
1927	958	144	665	789	172	459	693	66	66	216
1928	1,159	138	840	817	169	483	694	70	70	206
1929	1,341	135	993	867	169	513	693	74	74	246
1930	1,640	135	1,215	890	165	539	695	78	78	329
1931	1,825	158	1,155	799	151	529	693	76	76	358
1932	1,811	159	1,139	721	137	526	693	76	76	369
1933	1,707	162	1,054	715	131	546	559*	98	98	384

^aNotes in circulation in Belgium, end of year.

^bCurrency held by public plus demand deposits in United States, end of year.

^cCost of living index, Belgium.

^dCost of living index, United States.

^eExchange rate, Belgian francs per U.S. dollar.

^fForeign exchange reserves.

*In 1933 the U.S. dollar was devalued against gold.

SOURCES: Statistisches Reichsamt (1928; 1925, 1934).

APPENDIX TABLE A6
MONEY, PRICES, AND EXCHANGE RATES IN CZECHOSLOVAKIA,
1913-27

Year	M ^a	M ^{*b}	<u>M</u> M*	CPI ^c	CPI ^{*d}	<u>CPI</u> CPI*	ER ^e	<u>CPI</u> CPI*·ER	Gold and FE ^f
1913	—	100	100	—	100 ^g	100	100	100	—
1914	100 ^h			100					—
1919	1850 ⁱ	143	1298	—	156	—	—	—	—
1920	2431	159	1529	—	200	—	1343	—	100
1921	3099	144	2152	1423	174	818	1628	50	235
1922	2783	131	2124	1289	169	763	891	86	436
1923	2544	139	1830	918	173	531	691	77	667
1924	2273	141	1612	914	172	531	696	76	471
1925	2122	142	1494	951	178	534	687	78	465
1926	1997	143	1397	938	176	533	686	78	654
1927	2057	144	1428	976	172	567	684	83	787

^aNotes in circulation in Czechoslovakia, end of year.

^bCurrency held by public plus demand deposits in United States, end of year.

^cCost of living index, Czechoslovakia.

^dCost of living index, United States.

^eExchange rate, Czechoslovakian crowns per U.S. dollar.

^fForeign exchange reserves.

^gMarch-December 1913.

^hEstimated for 1914 as a percentage of the Austrian-Hungarian circulation, corresponding to the figures given by Amonn (1923, pp. 3-4) for this year and for February 1919.

ⁱFebruary 1919 following Amonn (1923, pp. 3-4).

SOURCES: Statistisches Reichsamt (1928; 1925-34).

APPENDIX TABLE A7

MONEY, PRICES, AND EXCHANGE RATES IN POLAND, 1914-33

Year	M ^a	M ^{*b}	$\frac{M}{M^*}$	CPI ^c	CPI ^{*d}	$\frac{CPI}{CPI^*}$	ER ^e	$\frac{CPI}{CPI^* \cdot ER}$	$\frac{M}{CPI}$	Gold & FE ^f
1914		116		100	100	100	100	100		
1915		111		206	99	208				
1916		123		341	112	304				
1917		131		1,029	143	720				
1918	252	148	170	1,424	165	863			18	
1919	1,310	164	799	2,016	182	1,108	1,512	73	65	
1920	12,165 ^g	182 ^g	6,684	12,165	200	6,083	5,312	115	100	
1921	56,569	165	34,284	46,843	150	31,229	76,839	41	121	100
1922	195,540	149	131,235	231,000	139	166,187	413,901	40	85	361
1923	30,897,559	161	19,191,030	119,656,600	143	83,675,944	117,859,147	71	26	384
1924										
March	146,942,673		90,705,354	287,296,800		200,906,853	221,915,198	91	51	
Dec.	244,370,351	162	150,845,896	336,600,000	143	235,384,615	223,214,286	105	73	1,203
Dec.	299,433,263 ^h		184,835,348						89	
1925	361,537,940	162	223,171,568	262,800,000	154	170,649,351	241,072,971	71	138	658
1926	452,920,535	165	274,497,294	205,818,213	158	130,264,692	377,780,735	34	220	977
1927	582,009,542	162	359,265,149	227,927,147	156	146,107,146	378,811,134	39	255	702
1928	682,976,225	160	426,860,141	229,072,510	154	148,748,383	380,728,607	39	298	2,503
1929	709,635,849	156	454,894,775	232,279,525	154	150,830,860	381,070,306	40	306	2,301
1930	696,164,732	157	443,417,027	216,244,449	149	145,130,503	381,641,169	38	322	1,829

APPENDIX TABLE A7 (cont.)
MONEY, PRICES, AND EXCHANGE RATES IN POLAND, 1914-33

Year	M ^a	M ^{*b}	$\frac{M}{M^*}$	CPI ^c	CPI ^{*d}	$\frac{CPI}{CPI^*}$	ER ^e	$\frac{CPI}{CPI^* \cdot ER}$	$\frac{M}{CPI}$	Gold & FE ^f
1931	647,555,665	183	353,855,555	196,773,286	137	143,630,136	381,946,330	38	329	1,526
1932	587,924,775	184	319,524,334	179,134,703	124	144,463,470	382,099,093	38	328	1,198
1933	596,968,323	189	315,856,256	163,099,627	118	138,220,023	274,885,273 ¹	50	366	1,058

^aBank notes issued by the Polish State Loan Bank until May 1924, and then by the Bank of Poland. From the second figure for December 1924, currency in circulation including bank notes of the Bank of Poland, token coins, and token notes (with denominations up to five zlotys) issued by the government; end of period figures.

^bCurrency in circulation in the United States, end of year.

^cUntil 1920 Polish wholesale price index (Fiedorowicz); from 1921. Polish cost of living index 1921-24 figures are for December (except in March 1924); in other years figures are annual averages.

^dU.S. cost of living index, annual averages.

^ePolish marks per U.S. dollar until March 1924. Thereafter, Polish zlotys per U.S. dollar (1,800,000 marks = 1 zloty). Average for July and December in 1918, average of December for 1921-24, annual averages for all other years.

^fForeign exchange reserves.

¹1920 set equal to figure for CPI (1920) or CPI* (1919; since CPI* figure refers to end of period), respectively, 12,165 and 182. 1920 thus serves as a base, since Polish monetary figures for 1918-19 are probably too low.

²The figure refers to currency in circulation, including coins and state cash notes (Staatskassenscheine).

³In 1933 the U.S. dollar was devalued against gold.

SOURCES: Statistisches Reichsamt (1928; 1924/25, 1934). For foreign exchange rates additionally: Young (1925) and Karpinski (1921/22).

References

- Alemann, R. T. *Goldmenge, Silberpeso and Papiergeld*. 150 Jahre Argentinische Währungen, Buenos Aires, 1966.
- Amonn, Alfred. "Die tschechoslovakische Währung und Währungsreform." *Schriften des Vereins für Sozialpolitik* 165 (1923): 1-21.
- Bamberger, Ludwig. *Reichsgold*. Leipzig: Brockhaus, 1876.
- Bernholz, Peter. "Economic Policies in a Democracy." *Kyklos* 19 (1966): 48-80.
- Bernholz, Peter. *Flexible Exchange Rates in Historical Perspective*. Princeton Studies in International Finance No. 49. Princeton University, 1982.
- Bernholz, Peter. "Inflation and Monetary Constitutions in Historical Perspective." *Kyklos* 36 (1983): 397-419.
- Bernholz, Peter. "Inflation, Over-Indebtedness, Crisis and Consolidation: Argentina and the Baring Crisis (1884-1900)." *Zeitschrift für die gesamte Staatswissenschaft* 140 (1984): 669-84.
- Bernholz, Peter; Gärtner, Manfred; and Heri, Erwin. "Historical Experiences with Flexible Exchange Rates: A Simulation of Common Qualitative Characteristics." *Journal of International Economics* 19 (1985): 21-45.
- Brennan, Geoffrey, and Buchanan, James M. *Monopoly in Money and Inflation*. Hobart Paper No. 88. London: Institute of Economic Affairs, 1981.
- Corden, Warner M. *The Revival of Protectionism*. Group of Thirty, Occasional Papers No. 14. New York, 1984.
- Eagley, R. V. *The Swedish Bullionist Controversy: P. N. Christiernin's Lectures on the High Price of Foreign Exchange in Sweden*. Philadelphia: American Philosophical Society, 1971.
- Fisher, Irving. *The Purchasing Power of Money*. New York: Macmillan, 1912.
- Frey, Bruno S., and Schneider, Friedrich. "Central Bank Behavior. A Positive Empirical Analysis." *Journal of Monetary Economics* 7 (1981): 291-315.
- Friedman, Milton. "The Role of Monetary Policy." *American Economic Review* 58 (March 1968): 1-17.
- Haupt, Ottomar. *L'histoire monétaire de notre temps*. Paris and Berlin, 1886.
- Hayek, F. A. *Denationalization of Money*. 2d ed. Hobart Paper No. 70. London: Institute of Economic Affairs, 1976.
- Heyn, O. "Das Steigen des Rupienkurses nach der Aufhebung der indischen Silberwährung und seine Ursachen." *Jahrbücher für Nationalökonomie und Statistik* 28, 3d ser. (1904): 160-79, 289-318.
- Kaiserliches Statistisches Amt. *Statistisches Handbuch für das Deutsche Reich*. Berlin, 1903.
- Kalkmann, P. "Hollands Goldwesen im 19. Jahrhundert." *Jahrbuch für Gesetzgebung, Verwaltung und Volkswirtschaft im Deutschen Reich* 25 (1901): 33-66.
- Karpinski, Z. "Die Währungs und Finanzverhältnisse Polens." *Weltwirtschaftliches Archiv* 19 (1921/22): 347-58.
- Kindleberger, Charles. *A Financial History of Western Europe*. London: George Allen and Unwin, 1984.
- League of Nations. *The Course and Control of Inflation: A Review of Monetary Experience after World War I*. Paris, 1946.

- Lexis, Wilhelm. "Papiergeld." *Handwörterbuch der Staatswissenschaften* 5 (1893).
- Makinen, Gail E., and Woodward, Thomas G. "Some Sadly Neglected Monetary Aspects of the Poincaré Stabilization of 1926." Paper presented at the Monetary and Financial History Conference, Federal Reserve Bank of Minneapolis, 24 October 1985.
- Meltzer, Allan H. "Some Evidence on the Comparative Uncertainty Experienced under Different Monetary Regimes." Paper presented at the conference on Alternative Monetary Regimes, Dartmouth College, 1984.
- Menger, Carl. *Der Uebergang zur Goldwährung*. Wien and Leipzig: Wilhelm Braumüller, 1892.
- Menger, Carl. "Aussagen vor der Währungs-Enquête-Kommission." 1892. Reprinted in *The Collected Works of Carl Menger*, vol. 4: *Schriften über Geldtheorie und Währungspolitik*, pp. 257–86. London: London School of Economics and Political Science, 1936.
- Mises, Ludwig von. "Die wirtschaftspolitischen Motive der österreichischen Valutaregulierung." *Zeitschrift für Volkswirtschaft, Sozialpolitik und Verwaltung* 16 (1907): 561–82.
- Mises, Ludwig von. *Theorie des Geldes und der Umlaufmittel*. München and Leipzig: Duncker and Humblot, 1912.
- Mitchell, Brian R., ed. *Abstract of British Historical Statistics*. Cambridge: Cambridge University Press, 1962.
- Mitchell, Brian R. *European Historical Statistics, 1750–1970*. New York: Columbia University Press, 1976.
- Mitchell, Wesley C. *Gold, Prices and Wages under the Greenback Standard*. Berkeley: University of California Press, 1908.
- Paldam, Martin. "Inflation and Political Instability in Eight Latin American Countries 1946–83." Memo No. 3. Institute of Economics, Aarhus Universitet, Denmark, 1985.
- Parkin, Michael, and Bade, Robin. "Central Bank Laws and Monetary Politics: A Preliminary Investigation." In *The Australian Monetary System in the 1970s*, pp. 24–39. Edited by M. A. Porter. Melbourne, Australia: Monash University, 1978.
- Sargent, Thomas J. "Stopping Moderate Inflation: The Methods of Poincaré and Thatcher." 1981. In *Inflation, Debt and Indexation*, pp. 54–96. Edited by Radiger Dornbusch and Mario H. Simonsen. Cambridge: MIT Press, 1983.
- Schmidt, P. G. "Die Zentralbank in der Demokratie." *Jahrbuch für Neue Politische Oekonomie* 2 (1983).
- Simons, Henry C. *Economic Policy for a Free Society*. Chicago: University of Chicago Press, 1948.
- Soetbeer, Adolf. *Materialien zur Erläuterung und Beurteilung der wirtschaftlichen Edelmetallverhältnisse und der Währungsfrage*. 2d ed. Berlin: Puttkammer and Mühlbrecht, 1886.
- Statistisches Bundesamt. *Statistisches Jahrbuch für die Bundesrepublik Deutschland* 1981.
- Statistisches Reichsamt. *Die Wirtschaft des Auslands 1900–1927*. Berlin: Reimar Hobbing, 1928.

- Statistisches Reichsamt. *Statistische Jahrbücher für das Deutsche Reich*. Berlin: Reimar Hobbing, 1921–22, 1924–34.
- Statistisches Reichsamt. *Statistisches Handbuch der Weltwirtschaft*. Berlin, 1936.
- U.S. Department of Commerce. Bureau of the Census. *Historical Statistics of the United States*. Bicentennial ed. Washington, D.C.: Government Printing Office, 1975.
- Vazquez-Presedo, V. *El Caso Argentino. Migracion de Factores, Comercio Exterior y Desarrollo, 1875–1914*. Buenos Aires: Eudeba, 1979.
- White, Lawrence H. *Free Banking in Britain: Theory, Experience and Debate, 1800–1845*. Cambridge: Cambridge University Press, 1984.
- Williams, John H. *Argentine International Trade Under Inconvertible Paper Money 1880–1900*. Cambridge, Mass.: Harvard University Press, 1920.
- Wolff, J. "Die argentinische Währungsreform von 1899." *Staats- und Sozialwissenschaftliche Forschungen* 24, no. 5 (1905): I–XV, 1–131.
- Yeager, Leland B., ed. *In Search of a Monetary Constitution*. Cambridge, Mass.: Harvard University Press, 1962.
- Young, J. P. *Foreign Currency and Exchange Investigation*. Prepared for the U.S. Senate Commission of Gold and Silver Inquiry, serial 9, vol. 2. Washington, D.C.: Government Printing Office, 1925.