ELIMINATING RUNAWAY INFLATION: LESSONS FROM THE GERMAN HYPERINFLATION

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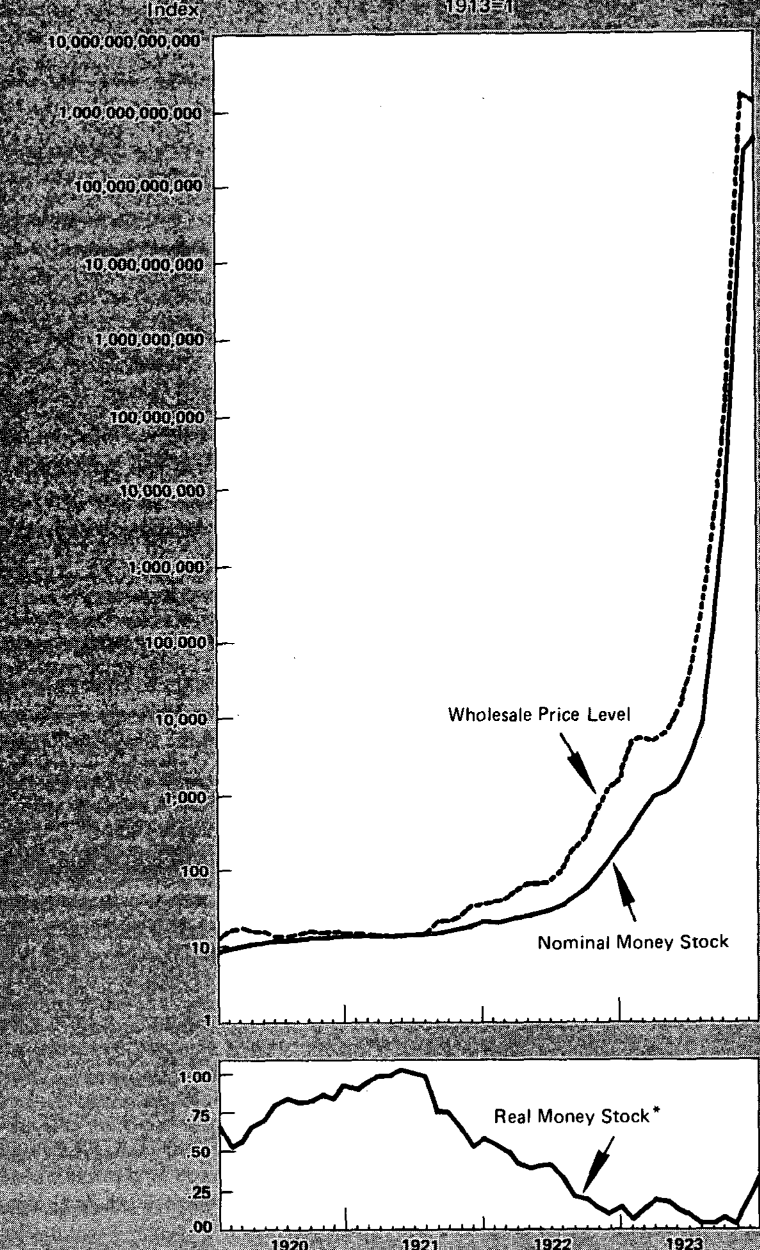
The German hyperinflation of 1923 is a classic example of what can happen when the monetary authorities let themselves be guided by false and misleading theories. In this case the fallacious theories included (1) an external shock or balance of payments theory of inflation and exchange rate depreciation, (2) a reverse causation theory of the link between money and prices, (3) the notion that the real money stock rather than the nominal money stock is the appropriate indicator of monetary ease or tightness, (4) the real bills doctrine according to which the money supply should accommodate itself to the needs of trade, and (5) the idea that the central bank can stabilize nominal market interest rates simply by pegging its discount rate at some arbitrary level.

Misleading Theories The authorities adhered to these theories to a ludicrous degree. For example, at the height of the inflation when a postage stamp and a newspaper cost 90 billion marks and 200 billion marks respectively, and when the money supply was expanding at a rate of 1300 percent per month and 30 paper mills were working overtime just to keep the Reichsbank supplied with paper for its banknotes, the authorities were actually insisting that money growth had nothing to do with inflation. On the contrary, they blamed inflation on external nonmonetary factors and declared that money growth was the consequence not the cause of inflation. Like modern government officials who attribute our present inflation to the machinations of the OPEC cartel, they located the source of inflation in the postwar punitive actions of the Allies. More specifically, they traced a chain of causation running from reparations burdens to balance of payments deficits to exchange rate depreciation to rising import prices and thence to general price inflation to rising money demand and finally to the money stock itself. That is, they argued that external shocks operating through the balance of payments caused the inflation, that the resulting rise in prices created a need for more money on the part of business and government to carry on the same level of real transactions, and that it was the duty of the Reichsbank to accommodate this need, a duty which it could accomplish without affecting prices. Far from seeing currency expansion as the source of inflation, they argued that it was the solution to the acute shortage of money caused by skyrocketing prices. In this connection they advanced the peculiar theory that monetary excess could not possibly be the source of German inflation since the real or price-deflated value of the German money stock was smaller than it had been before the inflation started. They failed to realize that excessive nominal money growth itself was responsible for the shrinkage in the real money stock. They did not see that inflationary monetary growth, by generating expectations of future inflation (expectations that constitute the anticipated depreciation cost of holding money) had greatly reduced the demand for money and had stimulated a corresponding rise in velocity. This inflation-induced rise in velocity had caused prices to rise faster than the nominal money stock thus producing the observed shrinkage in the real money stock (see chart on following page). This sequence of events, however, was beyond their comprehension. Hence even though the nominal money stock was several trillion times larger than at the beginning of the inflation, they argued that it was still not large enough because prices had actually risen faster than the money stock. They thought that they could prevent further shrinkage of the real money stock by increasing the nominal money stock. In so doing they succumbed to the fallacy that the policymakers can systematically control real economic variables (e.g., the real money stock) by controlling nominal economic variables (e.g., the nominal money stock).

Real Bills Doctrine Another fallacious theory to which they adhered was the real bills or needs of trade doctrine, which says that money can never be excessive as long as it is issued against bank loans made to finance real transactions in goods and services. What they overlooked was that the demand for loans also depends on the level of prices at which those real transactions are effected. They forget that rising prices would require an ever-growing volume of loans just to finance the same level of real transactions. Under the real bills criterion these loans

BEHAVIOR OF NOMINAL AND REAL MONEY STOCKS IN THE GERMAN HYPERINFLATION

1913=1



During the German hyperinflation the nominal money stock exploded while the real money stock, reflecting an inflation-induced flight from cash and a corresponding rise in the circulation velocity of money, declined sharply. The real money stock fell because inflationary nominal monetary growth, by generating expectations of future inflation and thereby raising the anticipated depreciation cost of holding money, reduced the demand for real cash balances and stimulated a corresponding rise in velocity. This expectations-induced rise in velocity caused prices to rise faster than the nominal money stock thus producing the observed fall in the real or price-deflated money stock. Efforts to arrest this fall via faster nominal money growth only served to prolong it. Not until late 1923 when anti-inflationary monetary reform seemed imminent did the real money stock revive.

*Index of the German Money Stock (1913=1) divided by the Index of Wholesale Prices (1913=1).

Source: Frank D. Graham, **Exchange, Prices, and Production in Hyperinflation: Germany, 1920-1923** (Princeton: Princeton University Press, 1930), pp. 105-106.

would be granted and the money stock would therefore expand. In this manner price inflation would generate the very monetary expansion necessary to sustain it and the real bills criterion would not limit the quantity of money in existence. In short, they failed to understand that the real bills criterion cannot distinguish between the price and output components of economic activity and therefore constitutes no bar to the inflationary overissue of money.

Inflationary Discount Rate Policy They also made the mistake of pegging the discount rate at a level of 90 percent, which they regarded as constituting an appropriate degree of monetary tightness at a time when the market rate of interest on bank loans was more than 7300 percent per year. This huge interest differential of course made it extremely profitable for banks to rediscount bills with the Reichsbank and then to loan out the proceeds, thereby producing additional inflationary expansions of the money supply and further upward pressure on interest rates. If the monetary authorities recognized this, however, they said nothing about it.

Monetary Reform Measures But I do not intend to dwell on the hyperinflation per se. Rather I wish to discuss the very successful monetary reform that ended it in a prompt and relatively painless manner—an accomplishment that seems beyond our powers today. Regarding the monetary reform the facts are as follows. On November 15, 1923 the government announced that it intended to get inflation under control. Acting quickly, it did four things.

- First, it transferred responsibility for monetary control from the Reichsbank to Dr. Hjalmar H. Schacht, the newly appointed Commissioner for the National Currency.
- Second, it issued a new currency called the Rentenmark to circulate with the old currency. The Rentenmark was declared to be equal in value to one prewar gold mark or one trillion depreciated paper marks.
- Third, it established a fixed upper limit on the amount of Rentenmarks that could be issued. According to Costantino Bresciani-Turroni, perhaps the leading authority on the hyperinflation episode, this limitation was crucial to the success of the monetary reform.[1]
- Fourth, it directed the Reichsbank to stop the discounting of Treasury bills, which meant in effect that the Reichsbank would issue no more paper money for the government.

The Miracle of the Rentenmark The reform was an instant success. The new currency was in great demand and circulated at its declared gold value. Within weeks the rate of inflation, which had been raging at an annual rate of 300,000 percent, dropped to virtually zero. And this was accomplished at a cost of only 10 percent lost potential output in 1924, the year following the monetary reform.[2]

To get an idea of the magnitude of this accomplishment were it to be attempted today, we can use the late Arthur Okun's rule of thumb calculation (which he derived from evaluating simulations from six econometric models) that the cost in terms of lost output per each 1 percentage point reduction in the rate of inflation is 10 percent of a year's GNP. According to Okun's 10 percent rule, it should have required a 50 percent GNP gap sustained for 600 centuries to eliminate Germany's 300,000 percent inflation rate.[3] In fact, however, the German inflation was virtually eliminated by early 1924 at the cost of only a 10 percent GNP gap.

How did they do it? How did the German authorities manage to eliminate an inflation that was infinitely worse than ours today and yet do it so quickly and painlessly? What recipe for success did they have that our authorities lack today? Most observers correctly note that the key to stopping the inflation was the eradication of inflationary expectations and the restoration of confidence in the German currency. But they offer only the vaguest of explanations as to why that confidence was so easily restored, attributing it either to a yearning of the German national spirit for monetary order and stability or to a naive belief on the part of the public that the new Rentenmark was worth one prewar gold mark simply because it was declared to be worth that much on the face of the note.

The Credibility Hypothesis There is, however, a more plausible explanation that stresses the credibility associated with the government's policy declarations. According to that explanation, when the

[1] Costantino Bresciani-Turroni, **The Economics of Inflation** (New York: Augustus Kelley, 1968), pp. 347-348, 402.

[2] Frank D. Graham, **Exchange, Prices, and Production in Hyperinflation: Germany, 1920-1923** (Princeton: Princeton University Press, 1930), p. 319.

[3] The computation is Roy Webb's. See his article, "Depression or Price Controls: A Fictitious Dilemma For Anti-Inflation Policy," Federal Reserve Bank of Richmond, **Economic Review** 66 (May/June 1980), p. 4.

German officials announced in November 1923 their intention to halt inflation, the public was fully convinced and accordingly swiftly revised downward its expectations of future inflation. People believed the government not only because it had placed the responsibility for stabilization in new hands but also because prior to the monetary reform it had taken decisive steps to reduce the budgetary deficits that were an immediate cause of inflationary money growth.[4] Consisting of drastic cuts in expenditures (particularly welfare relief to striking workers) and the levying of taxes in real (i.e., gold) rather than nominal terms, these measures were widely regarded as an essential prerequisite to monetary stabilization and a clear indication of the government's intention to end inflation. People also believed the government because it had not tried to mislead the public during the preceding hyperinflation. True, the officials had misunderstood the cause of the hyperinflation. But they at least had not lied to the public about the policy rule they were following at the time. On the contrary, throughout the inflationary episode the authorities candidly acknowledged that their main policy objective was to accommodate inflation with sufficient monetary growth to overcome inflation-induced shortages of money and to stabilize the real value of the money stock. In this connection Reichsbank president Rudolf Havenstein even boasted of the installation of new high-speed currency printing presses that would enable money growth to keep up with skyrocketing prices.

Because the authorities had instituted budget reforms compatible with monetary stability and because they had not lied to the public about the policy rule in effect during the preceding hyperinflation, there was ample reason for the public to believe the authorities' announced intention to change the policy rule and halt inflationary money growth. Consequently, inflationary expectations were swiftly revised to zero when the halt was announced, thereby allowing the speedy removal of inflation without large increases in lost ouput. Evidently, policy credibility was essential to the reversal of inflationary expectations and the resulting rapid termination of inflation.

[4] On this point see Ragnar Nurkse's comments in **The Course and Control of Inflation** (Geneva: League of Nations, 1946), pp. 22-23, 68-73. Nurkse stresses the contribution made by the fiscal reforms to the success of the stabilization of the mark. In particular, he notes that, since budget deficits were largely financed by inflationary money growth, decisive steps to reduce those deficits and bring the budget under control improved the prospects for monetary stabilization and thereby lowered inflationary expectations.

Lessons of the Monetary Reform There are at least three lessons to be learned from the monetary reform that ended the German hyperinflation. First, the task of subduing inflation is easier

- if the policymakers have established a record of credibility,
- if they accurately convey their intentions to the public, and
- if they convince the public of their resolve to stop inflation.

Unfortunately, these ingredients have been sadly lacking in many countries in recent years where anti-inflation rhetoric has been accompanied by steady and persistent increases in the basic trend rate of inflation.

Credible Policy Strategies A second lesson to be learned from the German stabilization episode is that a credible anti-inflation policy must focus on a single objective, namely the elimination of inflation.[5] A shifting-targets policy that focuses now on inflation, now on unemployment, now on interest rates or the foreign exchange value of the dollar or still some other objective will be largely ineffective in fighting inflation. The public, having observed the past tendency of the authorities to shift from one policy objective to another, will expect monetary restraint to be abandoned upon the first signs of economic slack as monetary policy shifts from fighting inflation to fighting unemployment. Knowing that monetary restraint will be temporary, wage and price setters will have no incentive to accept lower rates of wage and price increases when such restraint occurs. As a result, the inflation rate will respond but little to the short-lived efforts to reduce it.

The preceding should not be taken to imply that inflation is inherently resistant to all policy strategies. On the contrary, were the government to drop its shifting-targets policy strategy for one devoted solely to eliminating inflation, the inflation rate might subside rapidly once the public was convinced that a true anti-inflation policy was in force. Confronted with a new policy environment, economic agents would have an incentive to alter their wage- and price-setting behavior in a manner consistent with rapid adjustment to lower rates of inflation.

The third lesson is that we should be wary of pessimistic conclusions that inflation can only be removed

[5] What follows draws heavily from Webb, **op. cit.**, p. 5.

at the cost of a protracted and painful recession. Those conclusions often are derived from econometric models estimated for the period when the government's shifting-targets policy was in effect. These models usually assume that economic agents will not change their wage- and price-setting strategies when the policy environment changes. This assumption is questionable. For as mentioned above, if the focus of monetary policy were to change from a shifting-targets strategy to one of permanently eliminating inflation, the context in which wage and price decisions are made would be drastically altered. Responding to the new policy environment, people would adjust their expectational and price-setting behavior accordingly. Consequently, inflation would be less intractable and costly to subdue than in the past and the inflation rate could be brought down more swiftly and painlessly than indicated by the econometric models. The trick of course would be in convincing the public that the policy environment had indeed changed. But this could be done if the policymakers were to announce anti-inflation targets and then demonstrate that they were meeting those targets. Given a successful track record of meeting stated anti-inflation targets, policy credibility would be restored thus making it easier to get inflation under control.

Conclusion The preceding has enumerated three lessons taught by the stabilization episode that ended the German hyperinflation. Whether modern policymakers will ever consistently apply these lessons remains to be seen. Certainly the post-World War II policy record in many countries is hardly encouraging on this score, indicating as it does a tendency for the lessons to be more often forgotten than remembered. Over the past year, however, there are signs that the authorities both at home and abroad may have started to apply the lessons and that they may have abandoned their old shifting-targets policy of responding to the most pressing short-run concerns for a new longer run policy of eliminating inflation. The current recession, bringing pressures on the policymakers to shift from fighting inflation to fighting unemployment, should reveal whether this is in fact the case. So should the ensuing recovery when the central bank undoubtedly will be called upon to accelerate money growth to keep interest rates from rising. If the authorities can resist these pressures and stick to their longer term policy of eliminating inflation they will have shown that they have indeed learned the lessons of the German hyperinflation.

References

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2. Graham, Frank D. *Exchange, Prices, and Production in Hyperinflation: Germany, 1920-1923.* Princeton, Princeton University Press, 1930.

3. League of Nations. *The Course and Control of Inflation: A Review of Monetary Experience in Europe After World War I.* Geneva: League of Nations, 1946.

4. Webb, Roy H. "Depression or Price Controls: A Fictitious Dilemma For Anti-Inflation Policy." *Economic Review*, Federal Reserve Bank of Richmond 66 (May/June 1980), pp. 3-6.