

RATIONAL EXPECTATIONS AND MONETARY INSTITUTIONS

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(1) The concept of "monetary regime" figures prominently in the recent rational expectations literature. Elsewhere,¹ I have used the following two-part definition of it: A monetary regime is a system of expectations that governs the behavior of the public and that is sustained by the consistent behavior of the policy-making authorities. This is a rational expectations concept although, as the RE literature tends to go, it is stated here in fairly loose language. The present definition assumes that people understand the systematic components of the authorities' behavior in a general sort of way but avoids a linkage so tight as to build, for example, short-run neutrality or policy ineffectiveness assertions into the concept itself. Nonetheless, it is in effect an equilibrium concept. The expectations of the public and the actual behavior of the authorities mesh in equilibrium; when they do not mesh, it does not make sense to speak of a regime.

The regime concept is the key to what follows. It bridges the two parts of the title -- or, at least, it comes close to doing so. "Consistent behavior" comes close to "obeying rules," and a binding rule we would consider to be an "institutional arrangement." The response of the economy to particular shocks or policy-actions will depend on the expectations held by the public; what expectations are held depends on what regime the public believes to be in effect. Consequently, we need a different short-run macromodel for each regime. Short-run macromodels cannot be perfectly general. By the same token, some past

controversies -- where economists persisted in asserting different answers to the same questions -- were largely confusions over regimes.

(2) To illustrate the contentions made, consider the endless controversies over the Causes of Inflation.

The most basic Monetarist conviction of them all is that the cause of persistent inflation is money creation. There never has been a sustained inflation that was not fueled by a money supply expanding faster than the growth of real output. We find no exceptions to this rule on the historical record.

So the cause of inflations has a simple, perfectly general explanation. It is so simple, in fact, as to seem intellectually unsatisfying to many people. Surely, there is a "deeper" explanation?

The quest for deeper explanations is discouraged because it is so easy to show that none of them is general. The deeper question is why governments do not control the growth of the money supply so as to avoid inflation. In each particular instance of inflation, this will be an important historical and political question. But from instance to instance it has too many answers. Virtually every war in modern times has been financed in an inflationary manner -- but it does not take a war to make a raging inflation. Inflation is often associated with budget deficits -- but deficits can be handled in a non-inflationary manner. Deficit-financed wars make for a classic recipe -- but money creation is the sufficient and only ingredient.

Another category of familiar explanations comes under the

heading of cost-push. Organized labor, concentrated industries, or foreign suppliers (OPEC) start each new turn on the inflationary spiral, it is argued, by raising some prices and creating a situation which the government finds is most easily handled by money creation. It is obviously true that governments with a history of making monetary policy decisions contingent on the pricing decisions of such groups are bound to be beset by troubles of this kind. It is also true that in countries with a history of monetary stability one hears little of cost-push theories. In a stable monetary regime, the private sector will make pricing decisions contingent on the known monetary policy rather than the other way around.

It is not my intention to refuel these old quarrels here (although my own leanings are made clear above). The point, rather, is that what money creation is made contingent on as well as what expectations govern private sector pricing decisions are things that can be modelled. Indeed, both things must be included in a model of an inflationary regime. Cost-push theories can take their place in a taxonomy of regimes. One can then discuss the problems of how to get out of such an inflation without either denying the role of money creation or being wilfully obtuse about the political aspects of the problem. There is nothing to be gained by the indefinite prolongation of chicken-or-egg squabbles over the causes of inflation.

(3) As a first approximation, we may think of a monetary regime as characterized in its institutional aspect by a function

stating the conditions under which money will be created or destroyed. This is an approximation mostly because it is phrased as if we knew what "money" means.

The expectational aspect of regimes is trickier to handle -- even as a first approximation. We will want to assume that people "know", in some sense, what regime they have to live under. Yet, it would be a mistake, I believe, to proceed -- by the usual economist's reflex -- to assume that the populace will act "as if" they understand perfectly the economic implications (for the future of the price level, for instance) of every such set of rules governing money creation.

A Friedman rule, for example, would belong to the simplest class of such rules in being unconditional; one has little compunction in assuming that its implications, given some experience with it, would be understood. Indeed, the strongest argument for a Friedman rule is precisely that it is intelligible. The present U.S. regime, on the other hand, is not so readily intelligible. A specification of all the contingencies on which the expansion or contraction of the money supply by the authorities now depends would obviously be very lengthy and complex and probably include a number of "variables" that are not objective or measurable. It is very doubtful that you could get a dozen economists or assorted monetary experts to agree on what the specification should be. When theorists are not sure they understand or cannot agree, it is doubtful that they are entitled to the assumption that private sector agents understand and agree.

If we assume too much foresight in these matters on part of

transactors, we will end up modelling all regimes as if they were equally predictable. That, obviously, would leave us unable to discuss the choice of monetary regime in a useful fashion. Unfortunately, backing away from this trap in good order is not so easy. It is not at all clear what "more realistic" expectational assumptions to adopt. For the present, the wisest course, as Dennis Robertson once said, is "to look the issue squarely in the face and pass on." So we will simply proceed with caution.

(4) The antecedents to all the new-fangled writings on monetary regimes are found in the older literature on monetary standards.³ Whether we have good reason to change the terminology from "standard" to "regime" is debatable. But, although some of the problems of this older literature are apt to move to center stage again, its descriptive taxonomy may or may not fit our present analytical purposes. Instead of beginning from the general notions of fiat standard and commodity standard, I think it preferable to stress the two contrasting conceptions of how price level control can be accomplished. For brevity, we will refer to them as the quantity principle and the convertibility principle,⁴ respectively.

The quantity principle aims at control of the price level through control of some monetary aggregate usually referred to loosely as the "quantity of money." In its logically tidiest form, such a system will be on a pure fiat standard. It requires central banking. The private sector must be prevented from

creating perfect substitutes for the government-produced "money" that might render control of the latter nugatory. Hence the system requires considerable government control of the banking system. Basically, the government decides on the quantity of money and the private sector sets the price level.

The convertibility principle, in contrast, requires the government to set the legal price of some commodity (such as gold), allows banks to produce "money" redeemable into the commodity, and lets the private non-bank sector decide the quantity of paper money and bank deposits it desires to hold. If over-issue of bank monetary liabilities were to raise the market price of the standard commodity above the legal conversion rate, the commodity would be more cheaply obtainable at the banks. Redemptions of bank money would then eliminate the over-issue. In this manner, the non-bank public, rather than the government, polices the banking system so as to protect the economy from inflation.

Early banking history shows us systems relying altogether on convertibility for monetary control. Modern monetary systems have generally been compromises between the two principles -- until recently. The present system, however, retains no shred of convertibility. We now rely completely on governmental quantity control. This makes a Monetarist approach to monetary policy virtually unavoidable.

We may thus consider a spectrum of institutional possibilities with the commodity standard regimes towards the convertibility control extreme at one end and the fiat regimes toward the quantity control end. In between, we could array in

rough historical sequence the managed gold standard, the gold exchange standard, and the Bretton Woods system in its various stages. Analytically, we might extend this spectrum of possibilities at either end beyond the range of historically realized regimes by including some purely theoretical benchmark regimes. "Pure" cases, even if unrealistic, can help us understand the unclear mixes that constitute our actual empirical material. This is the object of the next section.

(5) The Moveable Nominal Scalar. The first benchmark regime should be one so constructed that it is perfectly obvious when an event takes place which requires a proportional rescaling of all nominal values in the economic system. We will refer to such events as "(purely) nominal shocks". Not all "monetary impulses" are simply nominal shocks in this pure sense. What would a regime be like in which neither transactors nor economist observers would ever have problems distinguishing nominal from mixed or real disturbances?

The purely nominal case requires a rather unreal story: In the deepest dungeon of the country is kept a fixed physical quantity of an unknown metal. The monetary authority, Prince Federico, issues irredeemable paper money to a nominal (dollar) amount computed by multiplying the number of ounces of dungeon metal (ODM) by a factor k . The sovereign is invested with the powers to regulate the value of money. Easily bored with constitutional powers left unutilized, Prince Fed (as affectionally known) from time to time amuses himself by changing

the "metal content" of the dollar, scaling the nominal value of all things real up and down as he pleases. Whenever he so does, holders of old irredeemable paper must (we may suppose) redeem it for new irredeemable paper at a rate which changes their nominal balances in the same proportion as the change in k .

Clearly, the loyal but logical subjects of the prince will adopt the ODM as their unit of account and write all contracts in ODM terms. They will do this although contracts have to be discharged in dollars and although no one has ever seen the dungeon metal and it is far from certain how much of it there is or whether it exists at all.

Prince Federico may seem far-fetched, but the nominal scalar case is not so far-fetched as to be out of touch with current theoretical discussion. Ben Eden ⁵ has argued, along these lines, for indexing to the monetary base as the best way for private agents to obtain "real" contract terms from which nominal disturbances will have been purged. Robert Lucas ⁶ works with models wherein changes in the money stock are equated with "currency reforms." In settings approximating our Price Fed case, such currency reforms would be totally pointless. In actual situations where a change in nominal scale would seem desirable, it may not be so easy to bring about. The 1934 increase in the official dollar price of gold did little to reflate the United States in the midst of the great depression.

Commodity basket standard. Under a gold standard, the price of gold in terms of dollars is fixed at the legal conversion rate. The quantity of redeemable paper in circulation may vary in

the course of the arbitrage operations that maintain this rate. If over-issue creates a tendency for the nominal price of gold to go above unity, paper money (or deposits) will be redeemed for gold at the bank by people who hope to profit from the resale. This anchors the price level in the sense that its fluctuations will be constrained to those of the relative value of gold in terms of other commodities. This, however, may not mean all that much in terms of price-stability to the extent that the non-monetary demand for gold is small and price-inelastic or the supply of gold variable.

For our second benchmark case, it would be convenient to have something more clearcut than the gold standard even if it also becomes unrealistic. Imagine, therefore, that we replace gold in this commodity standard by a broad basket of goods, ignoring all questions of how the banking system might maintain this "backing" in the real world.⁷ If the money price of the basket goes above unity, there will be an incentive to redeem money in baskets at the banks; if it falls below, the banking system will buy baskets for money until the price rises to the legal conversion rate.

Thus convertibility guarantees the stability of the money prices of output against variations in the issue of paper money. But we should not expect this to be the only mechanism. Variations in aggregate output relative to an "inelastic currency" could also pose a problem. We may suppose that, in this regime, a second mechanism is also used to regulate the quantity of money so as to provide for the stability of money prices. We may call it the "real bills" mechanism. Producers finance

increases in their output by also increasing their discounting of sound commercial bills at the banks. Bank credit will similarly shrink when aggregate output contracts. The stock of money varies with output. Since the price level is fixed, changes in the nominal stock are changes in the real money stock. Similarly, changes in measured money income are changes in real income in this regime.

* * *

In the Nominal Scalar case, the nominal stock of money is determined altogether by supply and it, in turn, determines the nominal price level. In the particular instance of it assumed above, agents should come to exhibit unit-elastic expectations with regard to the nominal scale of all real values. More generally, the nominal expectations appropriate to a fiat-quantity regime depends entirely on how it is being managed.

In the Basket Case, the nominal price level is fixed and the money stock is demand determined. Price level expectations should, in normal conditions, be completely inelastic. Fractional reserve banking means, however, that the risk of conversion runs on banks is always present. When they occur, distress sales in a liquidity crisis can reduce the price level below the constant equilibrium level. Expectations might reflect the probability of such an event.

One should not conclude that wherever we find a fiat standard, the nominal expectations of the public will be those appropriate to living under the reign of Prince Fed. If it is the consistent behavior of the monetary authorities to manage an

inconvertible paper standard so as to make it behave like a commodity standard, the public's behavior would be governed by the price level expectations appropriate to the latter. Something of the sort would seem to have been true for the Bretton Woods system for some twenty years.

The wage flexibility issue will illustrate the relevance of all this to short-run macrotheory. The response of average real wages to market conditions should be gradual in both regimes. In the commodity basket standard case, the nominal scalar is fixed so that there is no more movement in nominal than in real wages. An observer examining time-series data on such a system might be misled into believing that nominal wages were "rigid" and that this rigidity had something to do with its cyclical behavior. In the case of the moveable nominal scalar, what the time-series evidence would look like depends entirely upon how often and how much Prince Fed plays around with it. If k is changed often and in significant steps, and if (as we have assumed) people have found a way to contract in ODM's, statistics on dollar prices over time should show correspondingly impressive nominal flexibility.

(6) Much of the macroeconomic discussion over the last thirty years or so has structured the central issues as in the following simple diagram:

Nominal
shocks

Nominal
income

(wage/price
inflexibilities)

Real output
employment

Real
shocks

Both Keynesians and Monetarists have, on the whole, been content with a two-stage approach which explains, first, why nominal income moves and, second, why real income moves in the same direction. They have disagreed on whether monetary or real disturbances are the more important, at the first stage, in explaining why money income fluctuates but not over the appropriateness of the two-stage approach itself. At the second stage, most Keynesians and most Monetarists have postulated a "failure" of money wages and prices to adjust properly as the explanation of why real income and employment are positively correlated with nominal income.⁸ Small minorities on each side see a maladjustment of the real rate of interest as critical in explaining real income fluctuations.⁹

The two-stage approach presupposes, among other things, that the nature of the shocks affecting nominal income has nothing much to do with how the resulting movements in nominal income divide into price and output movements.¹⁰ The long predominance of IS-LM may explain the common acceptance of this analytical habit. In IS-LM analysis, IS-shifts are real and LM-shifts usually purely nominal and the two kinds of exercises are routinely performed in the same interest/income space. But, whatever are the reasons why it is seldom challenged, the presupposition is really an extraordinarily odd one. It is not true in equilibrium theory that purely nominal shocks affect real output or that purely real shocks change the nominal scale of things. It is not obvious why it should be true in some disequilibrium theory either. It might nonetheless be that

nominal and real shocks are found empirically to have approximately the same price and output effects in the short run. But why should one start from the presupposition that this is the case?

In what follows we will assume that nominal shocks work as (for example) in Friedman's theory of nominal income and, therefore, as illustrated in the diagram above. Real intertemporal shocks, on the other hand, affect real output and employment directly and the money stock indirectly. They become a significant problem when, as in the theories of Wicksell, Keynes et al., the intertemporal relative price structure "fails" to adjust appropriately. For the standard Keynesian case of a "change in the marginal efficiency of capital", this line of causation may be diagrammed as follows:

Shock to MEC	(inflexibility of real interest rate)	Output, employment	Real money supply
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Macroeconomic theories may be usefully classified by the nature of the shock they typically assume and by the type of maladjustment that is believed to prevent the immediate successful absorption of the shock. Allowing for the possibility of "mixed" disturbances and adjustment failures (especially important in balance-of-payments theory), the resulting taxonomy is conveniently summarized in the form of a "Swedish flag" as follows:

Adjustment Failures
Nominal Mixed Real

Nominal
Shocks Mixed
Real

Table I: "Swedish Flag"

In the upper left-hand corner we have (1) the N/N category to which Friedman's Monetarism belongs: purely nominal shocks and inflexible nominal prices. The N/R category (2) is exemplified by Lucas' theory of nominal shocks causing misperceptions of the real rate of return and hence intertemporal misallocations of labor and leisure. In the R/R box (3), we should put Keynes' General Theory: shocks to perceived real intertemporal transformation opportunities combined with maladjustments of real intertemporal prices.¹¹ The remaining R/N case (4) is the one familiar from Keynesian textbooks: MEC disturbances and inflexible or rigid nominal wages.

Recent controversies would have been easier to understand, perhaps, if they had pitted R/R Keynesians against N/N Monetarists. A preoccupation with the inflexibility of nominal wages is natural and all but necessary for Monetarists for, having postulated that aggregative shocks are purely nominal in nature, they must come up with some reason for why they are not neutralized in order to lay claim to having explained movements in output and employment. Actually, however, in one of these collective inconsistencies in which macroeconomics has been so rich, it is those who must vigorously dispute the nominal shock hypothesis who also most strenuously insist that wage stickiness

must be the key to the explanation of real income movements. Meanwhile, the most recent Monetarist work depends on misperceptions of real rates of return as the link that converts nominal shocks into real effects. This pits R/N theory, confusingly, against N/R theory.

How do these theoretical divisions relate to the spectrum of monetary regimes introduced earlier? This is a question to which we cannot attempt an exhaustive answer here. But the nature of the answer can be illustrated. Consider the following propositions, all of them frequently seen or implied in current macrotheoretical debates:

A) The banking system determines the nominal money stock but has no control over the real money stock. The public chooses the real money stock but has no control over the nominal money stock.

B) Observed changes in the nominal stock of money are to be interpreted as nominal shocks, i.e., the equilibration of the system requires a proportional scaling up of all nominal values.

C) Strong positive correlation between nominal money and nominal income is evidence for the Quantity Theory, even if prices fail to move proportionally to money "in the short run."

D) Real income and money income tend to move together because money wages and/or prices are "inflexible". If nominal wages were flexible (and if people were not fooled by unanticipated nominal disturbances) money income might fluctuate but real income would not deviate from its natural level.

(A) and (C) are Monetarist propositions, although (A) is frequently found as a property also of Keynesian models. (B) is not a proposition that one would derive from Friedman and Schwartz, Monetary History of the United States, but I associate

it with the later Friedman (who advocates the natural rate of unemployment doctrine).¹² (D) is held with particular insistence by professed Keynesians, who see it as their bulwark against the natural rate doctrine, but the last decade or so has seen virtually everyone from Okun to Lucas focus impressive theoretical efforts on explaining why money wages may fail to move proportionally to money income.

It is intuitively obvious that all four propositions might be true for a system close to the Prince Fed extreme at the quantity control end of the spectrum. It will be more instructive, however, to examine them far outside this natural habitat.

Suppose that aggregate output fluctuations were found to take place under a maintained convertibility regime. (We know that historical commodity standard systems were not free from trade cycles). Suppose also that we observe a strong correlation between nominal income and the money stock. Nonetheless, in that setting, all four propositions would be false.

It is simplest to look at these matters first from the standpoint of our artificial commodity basket standard. In that system, the price level is fixed. Suppose (in Keynesian textbook language) that the "marginal efficiency of capital" increases and induces an expansion of output partly financed by new bank credit. Money income and the money stock both rise. But the Quantity Theory, understood in the old way as asserting a proportional relationship between money and the price level, (C), is false here. The money supply is varying relative to a

constant price level. The rise in the nominal stock of money (B) is not a nominal shock. Convertibility guards the regime against such shocks. The Monetarist direction-of-causation hypothesis to account for the correlation between money and money income can not be right in this regime. Real income (D) is not changing because of a failure of inflexible prices to keep up with changing money income. Real income, valued at constant prices, is responding to a real disturbance. The nominal stock of money (A) responds to the non-bank sector's growing demand for real balances. The excess demand for money is not removed by falling money income.

All of this is by construction, of course. The construction assumes, among other things, that the simple absence of exogenous nominal shocks is not sufficient to ensure that the system will maintain itself at some fixed natural rate of unemployment. The question is whether the construction is at all plausible. The real disturbance hypothesis and its endogenous money and credit movements needs further discussion.

(7) Consider first how the story of a cyclical expansion would go without money and credit being brought into it. Lucas has provided some of the building-blocks that will help in sketching an explanation, different from his own, of the covariation of real and nominal income. Recall that in his story, the nominal interest rate fails, somehow, to reflect the inflation fully; agents, therefore, perceive the real rate of return to be higher than it can be and respond by working harder today and saving more in order to consume more (or work less) in the future.

Obviously, this story can be changed to fit a hypothetical situation where the real rate actually does change.

Staying, for the moment, within the ambit of equilibrium models, we may as well do Crusoe-economics. Suppose Crusoe learns that conditions are temporarily such as to promise an increased rate of return in one of his activities -- a large crop of corn, for instance. He will work harder and save more. In an economy with numerous agents, a rise in the future real income perceived to be derived from present factor employment in some sizeable sector would, correspondingly, increase both the demand and the supply of labor at the going real wage. This allows equilibrium employment to expand in one sector without equal contraction elsewhere; thus the "natural" rate of unemployment is not a constant but depends itself on the marginal efficiency of capital.

How can this increased output be sold if $MV = PT$ and all that? Nominal price level expectations are inelastic in our convertible regime, so money prices will not come down. We may suppose that the upswing is financed, in the main, by an all-around expansion of trade credit. In the transition to a higher level of sales, firms let their accounts receivable (and payable) grow. This expansion of non-bank trade credit shows up as an increase in "velocity". The banking system participates (central bank permitting) in the expansion of credit to the extent that the non-bank sectors' demand for deposits grows.

This expansion of money and credit allows spending to increase in some activities without forcing decreased spending

elsewhere. The same mechanisms will allow the cyclical expansion to spread to sectors that were not immediately affected but in which the business outlook is indirectly stimulated by the rising activity levels in the leading sector. Thus one need not expect real output and the price level to be negatively correlated in business cycles caused by "real" impulses.

It might be objected, perhaps, that the case sketched in the text is not one of a "purely" real cycle. One certainly can have no objection to stressing the "mixed" character of this kind of cycle for the monetary aspects of the story are fundamental to it. But it would be a bad mistake to confuse this mixed case with the usual Monetarist story. The present case -- as far as we have taken it at this point -- poses a real equilibrium process. If Monetarist control is imposed on the nominal money stock to prevent the acceleration of nominal income, this will interfere with the equilibrating adjustment of real income. To the extent that the banks are saving-investment intermediaries, a central bank attempt to prevent the acceleration of M2 will interfere with the coordination of intertemporal decisions. This should force the Wicksellian real market rate above the natural rate. At the same time, our commodity basket standard will not allow the price level to fall so as to accomodate rising real output with constant nominal income. The result should be a below equilibrium employment level.

In the upswing of this real equilibrium cycle, saving and investment both increase and real interest rates rise. Similarly, both the demand and the supply of labor increase with an indeterminate effect on present real wages. The model may now

be modified in a number of obvious directions. Certain distributional assumptions might be interesting to investigate, for instance. Lower rates of intertemporal substitution for workers than for capitalists comes to mind as an example. The market clearing assumptions may be abandoned. And so on. Here we will only consider two such variations.

With the commodity basket standard, the price level cannot move. Consequently, fluctuations in employment produce a horizontal Phillips scatter. Assuming instead a gold standard (or, of course, a gold exchange standard) will allow the price level to fluctuate as the relative price of gold varies. This permits but does not explain a systematic procyclical pattern of the money price level.

There is an entire class of theories, which looms large in the history of business cycle theory, that will explain this pattern in a commodity standard world. With apologies to Hayek, Myrdal and many others, call it the Wicksell-Keynes class. In Wicksell, or in Keynes, the banking system and the financial markets are apt to underestimate the magnitude of the required equilibrating adjustments in the real rate of interest. When they do, the market rate stays below the natural rate, and investment is being financed at a rate in excess of savings. With spending "injections" exceeding "leakages" from the circular flow, in the terms of "hydraulic Keynesianism", there will be upward pressure on the price level. The rise in prices will seem to justify some investments that should not have been made, so that the process may not only show "persistence" but also be "cumulative" ,as

Myrdal called it. Note that Monetarist control of some monetary aggregate could be beneficial here in preventing over-shooting of this variety from going very far.

Taking the real cycle story first presented, putting the system on a gold standard, and adding the Wicksellian hypothesis results in a model which should produce a downward sloping observational scatter in Phillips space as these real (or, by all means, "mixed") fluctuations take place. This Phillips curve is not the result of departures from some constant natural unemployment rate due to misperceptions of nominal shocks. Nor is it the result of nominal wage inflexibilities in the face of nominal income fluctuations. Instead, it reflects, firstly, system adjustments of real activity levels in response to changing (perceptions of) real intertemporal opportunities and, secondarily, the amplification of this pattern that may be caused by overextensions of credit in the upswings and correspondingly more severe credit contractions in the recessions. Countercyclical fiscal policy and credit policy could modify the cyclical behavior of real activity in this system. The Phillips curve would continue to give the appearance of stability as long as the monetary regime is maintained. If, however, some Prince Fed is let into the game to play around with the nominal scalar, this stability will be seen to vanish.

(8) Our spectrum of monetary regimes may be depicted schematically as follows:

QUANTITY
CONTROL

CONVERTIBILITY
CONTROL

|-----+-----+-----|
Nominal fiat gold basket
scalar standard standard standard

We have discussed mostly the two logical extremes. The range of historically realized regimes lies well inside these extremes.

There are, very broadly speaking, two theories to account for the cyclical correlation between nominal income and various measures of money. They have their intellectually "natural habitats", we have suggested, towards opposite ends of this spectrum of institutional possibilities. Correspondingly, we have two views of how monetary aggregates are determined and two views of how monetary policy works.

With regard to money supply theory the contrast is between the textbook base-multiplier model on the one (left) hand and what was at one time called the "New View" ¹⁹ on the other.

With regard to monetary policy doctrine, we juxtapose American Monetarism to the British Radcliffe Report. Twenty years ago, the latter was a much debated work of monetary institutional analysis. In the United States, it was soon forgotten except when brought out of the closet as an almost tailor-made, Savile Row strawman for monetarists. In Britain, it is still remembered with respect. ²⁰

The verdict on the Radcliffe Report will be different if we judge it as a central banking doctrine for a convertibility controlled monetary regime. We may think of it as R.S. Sayers' capstone on the long tradition of British writings on the managed

gold standard. What is then wrong about it may be simply that it appeared in a world that was too far gone on the road to multiple pure fiat moneys -- where only quantity control will do. Bretton Woods was supposed to copy some of the constraints of an international commodity standard while avoiding some of the gold standard's undesirable features (recently rehearsed in American debate). But the history of Bretton Woods was in large measure a story of continual attempts to relax those constraints in the name of creating international liquidity. The nominal scale of things was adrift, dragging its anchor, about to cast loose just a decade or so after Radcliffe.

In a regime with a firm commodity standard anchor, the public will rationally expect that maintenance of convertibility will regulate the price level over the longer run. The central bank does not pursue control of the price level (or of nominal income) directly but does so indirectly by maintaining convertibility and seeing to the solvency of the banking system. Over the longer run, the real quantity of base money is endogenous and beyond the central bank's control. In the shorter run, however, the central bank can within limits manipulate the volume of high-powered money; even so, it is likely to formulate its policies, not in terms of money stock targets, but in terms of interest rates and "credit conditions." The usual argument against interest rate targets -- i.e., that it is likely to produce explosive nominal instability -- obviously does not apply under a commodity standard. The price level and price expectations both are kept in check by convertibility.

In the world to which the Radcliffe Report belongs,

convertibility prevents exogenous, purely nominal shocks while permitting some endogenous "elasticity" of the currency. The monetary authorities of a fiat regime can make nominal income anything they want; this is totally beyond the severely constrained powers of a central bank under convertibility. In the latter system, cycles occur in response to real shocks and, in their financial aspects, are chiefly "credit cycles." The main duty of the central bank is to see to it that the expansions and contractions of credit do not go so far as to significantly increase the amplitude of the cycle. It does so by working on real interest rates and modifying the real supply of credit. Its (limited) ability to affect the course of the cycle does not depend on money illusion on part of the public but stems from the fact that it does affect the "real liquidity" of the system. There is no single scalar measure for this "liquidity". The currency stock is simply demand determined and other monetary aggregates will be ambiguous. Monetary transmission is via real interest rates and other credit conditions. Since the state of the markets never replicates itself exactly between real cycles, the quantitative effects and the lags of any policy measure are uncertain. Hence, the imprecise "touch and feel" language of the Art of Central Banking. But, relative to the size of modern financial systems, the real resources of the central bank are slim and the "effectiveness" of monetary policy, though hard to quantify, must be correspondingly limited.

Contrast the Monetarist view on all this: The money-income correlation reflects mainly exogenous money supply shocks causing

nominal income movements. The central bank operates on the
monetary base ²² and such effects as it may have on real
magnitudes are due to the failure of the private sector to scale
prices in proportion to the base and nominal interest rates in
proportion to the rate of price change. Cycles in real magnitudes
arise because money wages and prices fail to equilibrate.
Monetary policy is extremely effective in controlling nominal
income but will have no effects on real income once the public
comes to their senses.

(9) The historical evolution of monetary institutions have taken
us from right to left on the regime spectrum. It is half a
century since we last saw general convertibility (and when last
seen it ended in disaster). For a decade, we have been on a pure
fiat standard with not a vestige of convertibility remaining.

What have been the historical forces behind this evolution?
It is a complex story. The desire to insulate the monetary system
from the vagaries of gold production, although much discussed,
has probably not been of much importance. The desire to relax
monetary constraints on government budgets has obviously played a
role everywhere and, in many countries, been decisive. But the
always present motive underlying the historical trend away from
convertibility control and towards pure quantity control has
been the desire to reduce the risks of severe credit contractions
and of runs on fractional reserve banking systems.

The way-stations on this road are not easily described with
precision. President Roosevelt's 1934 reforms abolished gold-
convertibility for the American public and retained it only

between central banks. This not only reduced the risk of banking panics directly, it also made feasible a system of deposit insurance that made their recurrence on the 1929-33 scale extremely improbable. But deprived of the redemption privilege, private parties could no longer protect themselves against "debauchment of the currency." The United States was henceforth on governmental quantity control.

It is conventional to term it ... a managed standard, but that simply evades the difficult problem of definition. It is clearly a fiduciary rather than a commodity standard, but it is not possible to specify briefly who manages its quantity and on what principles.... Perhaps a 'discretionary fiduciary standard' is the best simple term to characterize the monetary standard which has evolved. If it is vague and ambiguous, so is the standard it denotes.²³

To complete our description of this regime we need to specify the expectations that would go along with it. The problem is that a "vague and ambiguous" standard can hardly determine a well-defined system of rational expectations. This problem becomes no easier when we turn to the postwar Bretton Woods system whose rules were not only vague and ambiguous but also perpetually up for negotiations between the major Western countries. The final demise of Bretton Woods, moreover, left us with a system to which the term "standard" can be applied only with ironical intent.²⁴

From 1934, the United States enjoyed for practical purposes virtually unlimited discretion in monetary policy. As long as the fixed exchange rate system lasted, smaller open economies could gain quantity control only by restricting the international convertibility of their currencies. The rules of the postwar Bretton Woods system gave them only limited scope for autonomous

policy. The future stability of nominal values in this system depended on the restraint of the U.S. monetary authorities. Until the mid-sixties, such restraint came cheap. In this period, the nominal expectations appropriate to an economy with convertible money were sustained by quantity control in a system where the central convertibility mechanism was missing. Gradually, stabilization policy became increasingly activist but still the Phillips-curve did not shift about. In the late sixties, monetary restraint seemed less attractive to U.S. policy makers and, by the early seventies, faith in the system's nominal stability had been broken. The Phillips-curve, which had maintained the appearance of stability for so long, began to misbehave.

What, then, are the theoretical consequences of the historical movement from right to left across the spectrum of regimes? Keynesian real (R/R) cycle theory and Radcliffe/New View monetary doctrine are, as we have seen, appropriate for regimes toward the right. Monetarist (N/N) cycle hypotheses and Monetarist policy doctrine similarly belong naturally toward the left end of the spectrum. Yet, it does not follow that the evolution of monetary institutions away from convertibility control and towards pure quantity control should lead us to replace one set of hypotheses with the other as if they were mutually exclusive. Instead, the appropriate conclusion, I believe, is that the problems associated with a moveable nominal scalar do not supplant but are rather superimposed on those which we know occur also in systems where nominal values are fairly securely anchored. The Monetarist hypothesis of

exogenously determined changes in the nominal quantity of money has to be added to the Radcliffe theory of endogenous variations in the real money stock. The nominal shock/nominal maladjustment hypothesis of the cycle has to be recognized as a complement to the Keynesian real shock/real maladjustment theory.

FOOTNOTES

1. Cf., Leijonhufvud (1981b), (1983).
2. We do not have that experience as yet. I do not think the implications are widely understood today, even among monetary economists. Cf. below.
3. Students of my generation couldn't find any "theory" in this literature and were bored by it. How wrong we were!
4. Here I am paraphrasing my (1982).
5. Benjamin Eden (1979).
6. Cf. his review of Tobin. Lucas (1981).
7. One might perhaps imagine the possibility of a system of this sort being operated with government-issued money, with redemption taking the form of a decrease in tax-liability. If, for example, the price level reaches 101, then \$100 turned in at the government bank should earn a \$101 reduction in tax-liability. If this also seems unrealistic, that is mainly because of the constitutional constraints on government fiscal operations that would have to be added to make such a scheme work.
8. E.g., Arthur M. Okun (1981), Robert J. Gordon (1981), Milton Friedman (1968), Robert E. Lucas, Jr. (1972).
9. A. Leijonhufvud, "The Wicksell Connection," in my (1981); R.E. Lucas, Jr. (1977).
10. Friedman (1977), pp. 453-4, is more circumspect than most: "The effects of a change in aggregate nominal demand on employment and price levels may not be independent of the source of the change...." But even he proceeds without worrying about it: "Yet there is a considerable measure of independence To a first approximation, the effects on employment and price levels may depend only on the magnitude of the change in aggregate nominal demand, not on its source." (italics added).
11. Cf., A. Leijonhufvud (1968).
12. Frank Hahn (1983), Chapter II, puts great stress on distribution effects as an objection to the neutrality of changes in the quantity of money. In ignoring this point in this paper, I do not deny its validity in principle. But pursuit of it puts us on a siding off the main track. Distribution effects may seem the last-ditch defense against the New Classical Economics if you already accept the rest of (A) through (D) above. But one need not accept it all -- or even most of it.

13. For a survey of and commentary on models of this genre, cf., Robert J. Barro (1981), esp. pp. 43 ff.

14. "But the result of [such a] heroic defence of the stability of prices at all costs may be so fearful a disorganization of the normal processes of production and employment that the net effect is much worse than if a less heroic policy had been pursued." J.M. Keynes (1973), p. 90, quoted by Basil J. Moore (1983).

15. In our example, workers are willing to supply more labor at the same money wage and same money price for current consumption goods because they are being offered more future consumption for an hour of current labor. Similarly, on the demand side, the marginal physical product of current labor may fall with increasing employment but nonetheless promise increased future marginal value product.

Note that the empirical evidence shows no systematic cyclical pattern in real wage rates. We do not want such a systematic pattern in our model, therefore.

16. Cf., again, my "Wicksell Connection," op.cit.

17. Cf., Alan Coddington (1976).

18. Gunnar Myrdal (1939).

19. Cf., esp., James Tobin (1963).

20. Cf., esp., Nicholas Kaldor (1982).

21. This assessment pertains to "normal" circumstances. In a crunch, the lender of last resort can, of course, have a major influence on the course of events.

22. The use of interest rate targets is regarded as positively dangerous and attention to credit conditions as confusing: "Indeed, a key finding in our Monetary History is that the confusion of money and credit has been a primary source of difficulty in monetary policy." Milton Friedman in his (1964), p.263.

23. Milton Friedman and Anna J. Schwartz, A Monetary History of the United States, 1867-1960, Princeton 1963, p.474.

24. E.g., Ben Klein's "Our New Monetary Standard" (1975). Cf., also the discussion of the "Random Walk Monetary Standard" in my (1981b) and (1982).

25. A system of expectations consistent with the convertibility principle means basically that people expect prices to revert to the longer term trend if and when they go above or below trend. Cf., B. Klein, op.cit.

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