

THEORIES OF STAGFLATION

by

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1. The occurrence of stagflation came as a nasty shock to a great many economists. Evidently, the economics profession had gotten so much into the habit of teaching that unemployment and inflation are alternating or alternative phenomena that their actual conjuncture seemed at first to be a riddle to which received theory might not supply an answer. A few writers of some note indeed went so far as to proclaim that stagflation proved the bankruptcy of standard theory.

Well, stagflation is not a riddle. Farfetched or ad hoc explanations are not required. Instead, theories of unemployment and theories of inflation can be combined in a variety of ways that avoid contradiction. I want to discuss a few of these. It seems easiest to start by considering different theories of unemployment.

2. Stagflation I: The Case of the Missing Market Mechanism. The first theory of unemployment that needs to be mentioned is based on the notion that labor markets do not have functioning market mechanisms. Wage rates are not governed by demands and supplies of labor. In particular, an excess supply of labor does not constitute a "market force" that will set in motion adjustments that could ensue in its own elimination. Wage determination is to be explained by institutional factors, exogenous to the market.

A common version of this theory has wage rates independent of the excess demand for labor at all values of employment below "full" employment with inflation in wage rates setting in at overfull employment. This version has been often cited by people who find stagflation a paradox and regard it as proof that the world has left "Keynesian" economics behind

on the scrapheap of no longer useful social theories.¹

This theory draws a sharp line between deficient and excessive aggregate demand. You have either one or the other and the one gives you unemployment and the other inflation. So how can you have stagflation consistent with this view of the world?

The answer given is that you have to relinquish the exclusive preoccupation with aggregate demand that characterizes most of received business cycle theory -- and bring in aggregate supply. If aggregate supply price were to rise at a faster pace than the rise in nominal aggregate demand, the observed consequence should be a contraction of output in the midst of inflation. A wage-push of a magnitude larger than what the monetary authorities will validate is one possibility -- and the one most often adduced of course. The second possibility for getting unemployment and inflation at the same time in this framework is to have cost-push emanating from an important factor of production complementary to labor -- say, energy. Needless to say, this one has been rather popular since 1974.

Two observations about the missing market mechanism theory before we proceed: (1) The theory suggests that stagflation is the result of a rather fortuitous concatenation of events: "too big" a factor-price rise just happens to impinge on an inflation that is already going on for other reasons. There is no intimation here that recessions must be expected to occur in inflationary regimes just as well as in regimes of monetary

¹ Economists who insist that this version of the theory is strictly "Keynesian" make a needless puzzle of the initial victory of Keynesianism in the U.S. The period 1933-37 in the United States had large scale (albeit shrinking) unemployment combined with considerable inflation.

stability. (2) The theory does suggest that monopolistic or collusive price-setting in input markets is critical in the explanation of stagflation -- that with competitive markets the phenomenon would not occur.² Economists who accept this theory, therefore, tend to advocate income policies or price controls as supplements to aggregate demand management policies.

3. Stagflation II: Lapses from the Natural Rate of Unemployment.

This theory, of course, starts off from a position directly opposite to the previous one. Here we assume a well-functioning labor market mechanism that functions "as if competitive," and sets corrective forces in motion when employment differs from its equilibrium level. It does not necessarily work with great speed, however, for it must work on the basis of less than complete information.

Theories with the natural rate feature are not necessarily monetarist for the rest. Here, however, I have a monetarist theory in mind and will use the label accordingly. In the present context this will be taken to mean two things: (1) All impulses disturbing the time-path of the economy are money supply impulses. (2) The assumption that the labor market does work suffices by itself to guarantee convergence, even if delayed, to the natural rate of unemployment.

The trick here, obviously, is to explain both the inflation and the simultaneous unemployment in a stagflation episode as due to the same kind of disturbance rather than as consequences of the concatenation of two

²Cf., for example, Gottfried Haberler, "Stagflation: An Analysis of Its Causes and Cures," in B. Balassa and R. Nelson, eds., Economic Progress, Private Values and Public Policy: Essays in Honor of William Fellner, Amsterdam, 1977.

different shocks. It can be done by suitable assumptions about the system's lag-structure: inflation is caused by monetary expansion and deviations of unemployment from its natural rate reflect delayed adjustments to past monetary shocks.

The most familiar version of monetarist stagflation explanation stems directly from Friedman's original critique of the Phillips-curve. Suppose we start the story with the economy in a state of zero inflation and equilibrium unemployment. Then let the monetary authorities increase the rate of money stock growth by, say, 10%. Nominal aggregate demand accelerates correspondingly but, in the first stage, not all of the increase in nominal income comes in the form of price rises. There is also an increase in employment and output, as the volume of search unemployment temporarily decreases. Later on, as workers overcome their initial "bamboozlement" (as Tobin called it),³ unemployment would rise back to its natural rate; with the growth in nominal income proceeding at a constant rate, the inflation would actually accelerate at this stage as prices that initially lagged behind the rate of monetary expansion now catch up.⁴

If, next, we suppose that the monetary growth rate is again reduced by 10%, an initial stage of quantity adjustments would find unemployment growing beyond the natural rate as inflation decelerates. If the story is graphed in Phillips space, successive "observations" would describe a clockwise loop around the vertical long-run Phillips curve. Two parts of the loop are of interest in the stagflation context: (A) The

³Tobin, "Inflation and Unemployment," American Economic Review, March 1972.

⁴M.R. Darby, Macroeconomics, New York 1976, pp. 159-60, 348-49.

"NW-segment" where inflation is accelerating and unemployment below its natural rate but increasing; (B) the "NE" part where inflation starts to decelerate, and unemployment increases beyond the natural rate.

For this story (as far as we have taken it) we would, however, not expect to observe a stagflation phase (C) where inflation is rising and unemployment in excess of its natural rate and growing. Is an inflationary recession of this type excluded by monetarist natural rate theory? Not really. In principle, the theory is flexible enough that "anything" may happen. But the story it might tell of a C-type episode is, perhaps, not altogether plausible. It is instructive to consider how it would go.

The immediate objective is to change the lag-assumptions^{so} as to obtain a process that loops counter-clockwise. That is easily done. The lag structure, however, is not a merely mechanical matter. The lags reflect important behavioral assumptions regarding "who knows what when." Movements of real output and employment away from their equilibrium levels reflect information differentials between two sets of agents in the model. In the standard, Friedman loop, exercise: entrepreneurs learn the truth about the inflation before workers do; observing the demand-prices for their output going up in relation to money wages, firms find that they can hire labor at a reduced real wage; workers whose perceptions of the inflation rate are lagging believe they are being hired at unchanged or somewhat improved real wages. It is this inconsistency in beliefs that produces the disequilibrium. Firms and workers only contract for a volume of employment different from the natural rate because of it. If both sets of agents had the same beliefs about the inflation rate, they would agree on the equilibrium volume of employment -- even if both were wrong about the rate of inflation in prospect.

For the clockwise loop, entrepreneurs perceive what the rate of inflation is going to be before workers do. To get the counter-clockwise loop, we should assume that labor catches on before firms do.⁵ When the inflation rate is stepped up and workers, perceiving it correctly, demand unchanged real wages, firms (incorrectly) see a rise in the real supply price of labor and, consequently, offer less employment. It is a possible story but, intuitively, it seems somewhat contrived.⁶

Models of the type just discussed are so simple in structure that there is hardly anything else than the real wage that agents can be wrong about. It is not something one should be wrong about for very long, moreover, for the missing information should be gained quickly if not immediately: workers bamboozled into accepting jobs at apparently attractive remuneration will find out the price level that goes with their money wage "by next period" at the latest. Persistent and large-scale disequilibria are unlikely in this setting, therefore. A single relative price to worry about and a one-period time horizon make for a coordination problem simple enough that adjustments in the money wage responding to the excess demand for labor is all it takes to ensure a quick return to equilibrium activity levels.

⁵ Assuming that, when firms know what is going on, labor has gotten an exaggerated notion of the inflation rate will produce the same consequences.

⁶ When Friedman considered stagflation in his Nobel-lecture, he did not take this tack. Instead, he argued that high rates of inflation render the economy increasingly inefficient. Agreed. It is not obvious, however, that the inefficiency will be of a kind that reduces the demand for labor. Cf., M. Friedman, "Inflation and Unemployment," Journal of Political Economy, June 1977.

The Missing Market Mechanism theory, as we have seen, leads its proponents to wish for more policy instruments. Monetarist Natural Rate theory will make one wish for less. Both unemployment and inflation are results of monetary mismanagement. The policy implication of it all, of course, is just to cease and desist.

4. Stagflation III: The Mystery of Saving and Investment. Although we have not heard much about them in recent years, there is a whole class of older business cycle theories that made investment the villain of their plots. Let us call these "real" business cycle theories to distinguish them from "monetary" (or monetarist) ones where the causal impulse always stems from the money supply. Keynes' theory was a "real" one in this sense. It will be of particular interest here because of its central contention that a functioning labor market mechanism would not by itself suffice to guarantee full employment if the system failed appropriately to coordinate saving and investment. If, at full employment real income, there is an ex ante "gap" between saving and investment, reductions in the money wage will not restore equilibrium.

Could the recession-phase of such a cycle coincide with inflation? Or the same question from a different angle: Was the "real" business cycle a problem that could all along have been wiped out by inflationary policies?

Consider how a recession develops from a "real" disturbance. Suppose we start with the economy on a full employment equilibrium growth-path. Next, there is "a decline in the marginal efficiency of capital" (as it used to be called in Keynesian analysis), perhaps due to a slackening in the rate of technical progress. If all agents perceive correctly what has

happened, the system as a whole should adapt rationally to changed circumstances and traverse to a lower growth path. Resources should be transferred from capital goods producing industries to consumption industries. This should not entail any reduction in aggregate employment, nor need the amount of labor demanded necessarily be less even if money wage rates stay unchanged. The interest rate should fall so that desired saving will not exceed the new lower level of investment.

But all agents will not in general correctly assess what is happening. Information on the decline in prospective yields on new investment is dispersed piecemeal among entrepreneurs, each of whom is concerned primarily with the prospects of his own firm, and most of whom have limited confidence in their own forecasts. No one has a complete overview of the investment outlook in every industry. Each firm that cuts its investment spending will, however, also reduce its demand for external funds. Information on the reduced supply of new securities will be pooled in financial markets where investors will, in effect, have to take a position on what they believe has happened to the economy-wide real rate of return. If they underestimate the decline, i.e., if they overestimate the real rate that can be earned at a full employment investment level, there will emerge what Keynes called a "speculative" demand for money. On net, the financial markets take a bearish stance, with most investors going liquid hoping to buy back into the market later at lower securities prices. The speculative demand is a net increase in the aggregate demand for money relative to an unchanged supply. The resulting excess demand for money coupled with the excess supply of commodities (due to the cut in investment spending) means that nominal aggregate demand will fall.

In our Natural Rate analysis, deviations from employment equilibrium stemmed from inconsistent beliefs on the part of firms and workers with regard to the real purchasing power of the agreed-upon money wage. This problem does not arise in the Saving-Investment case. Here, the discoordination stems instead from the inconsistent beliefs of firms and security markets investors about the realizeable rate of real profit in the economy. This inconsistency is revealed in the decline of money income below its equilibrium value. Prevailing money wages are in line with equilibrium money income. If there had been no misunderstanding between entrepreneurs and investors, the system would have continued at full employment without any change in money wage rates. Once these groups have failed to reconcile their beliefs about the prospective return to capital (leaving, in Wicksellian terms, a market rate in excess of the natural rate), there is nothing that labor can do by adjusting their wage demands that will restore the economy to general equilibrium.⁷ We may suppose that the one thing workers will not do is to auction off their services for the day at whatever wage employers will pay in total disregard of their own beliefs about what the equilibrium rate is. If, consequently, money wages fail to fall in proportion to the decline in nominal aggregate demand, the result will be unemployment.

This story can be summarized in the form of the following excess demand table:

⁷For detailed discussion, cf., Leijonhufvud, "The Wicksell Connection," UCLA Working Paper No. 165, November 1979, esp. Section VI.

	<u>LABOR</u>	<u>COMMODITIES</u>	<u>SECURITIES</u>	<u>MONEY</u>
Initial Equilibrium	0	0	0	0
MEC declines	0	ES	ED	0
Interest rate declines	0	ES	0	ED
Money income & employment fall	ES	0	0	0

The question is: Can unemployment arise in this way in the midst of an inflation? The notion that it well might would seem to run into trouble in the third row of the ED-table. It shows an excess demand for money arising at one stage of the process.⁸ But inflation is supposed to be fueled by an excess supply of money. So how could we have both at once?

5. We now have two questions about stagflation. Could one simultaneously observe unemployment, excess capacity and other excess supply phenomena and rising money prices if markets generally were competitive?⁹ If in the traditional aggregate demand theories of business cycles -- whether Monetarist or Keynesian -- it takes an excess demand for money to produce a recession and an excess supply of money to produce inflation, can these theories provide a sensible explanation for stagflation?

⁸This excess demand for money, moreover, is a necessary part of the story. If no excess demand for money emerges as the interest rate declines, the market rate will fall until it coincides with the natural rate; full employment saving will equal investment on a lower growth path; there will be no deflationary pressure on the price level -- and the equilibrium volume of employment will be offered at prevailing money wages.

⁹With "competitive" here, I do not mean suppliers facing "infinitely elastic demand curves," etc., but suppliers engaging in and finding themselves subject of rivalrous behavior.

Those who see a riddle in the coexistence of excess supplies and rising money prices in competitive markets are, I think, led astray by an ambiguity that has long been tolerated in theoretical accounts of how the market mechanism is supposed to work.

The usual story that we tell in the classroom (if indeed we go beyond just pointing to the intersection of supply and demand) might go like this: "If good i is in excess supply, competition between dissatisfied sellers will make the (money) price of i fall."

I believe we will have to get used to putting it a bit more carefully than that. For example: "If good i is in excess supply, competition between suppliers of good i should make them reduce the amount of purchasing power over other goods that is demanded when a unit of good i is offered." It is helpful, at least at first, to try to peer through the veil of money. If the suppliers of a good cannot sell all that they would like to sell, they will have to offer better terms, i.e., better real terms. This does not necessarily entail asking for less money.

The ambiguity of the first short-hand statement used not to matter. "Back in the good old days," whenever we were not talking about some hypothetical barter exchange in the first place, we were talking about monetary exchange in the presumed setting of a monetary standard so constructed as to assure the approximate constancy of the purchasing power of money over the longer run. In that setting, of course, a seller who wants to offer better terms for what he is selling has to ask for less money per unit.

Imagine, then, if you will, a monetary standard so constructed that money as a claim on real resources "wastes away" at 15% per year. In that

setting, if excess supply prevails in a market, theory makes us expect to observe sellers offer buyers gradually better terms -- which is to say, the money price in that market should rise at a pace less than an annual rate of 15%. That much is straightforward. This good is then getting cheaper in terms of those goods whose money prices do rise at a rate of 15% or higher.

But can we have this happening to all non-money goods at the same time? If all non-money goods are in excess supply, then money must (by Say's Principle) be in corresponding excess demand. And that, of course, is quite possible. The assumption, in the present case, that money is a depreciating asset does nothing to exclude the possibility of a generalized excess demand for money.

6. The conceptual experiment of the "depreciating standard" is not a perfect analogy for a real world inflation. If it is spelled out in some more detail, we can then see where it fits and where it does not fit.

Consider a case of "ordinary" inflation where the government causes the money stock to grow by 15% per annum. For simplicity, let us suppose that 15% money growth produces a 15% inflation. We ignore the growth in real GNP.

The analogical case suggested above, is one of stamped money. All government issued money is dated. At the date of issue a one-dollar bill will legally discharge a debt of one dollar. One year later, we suppose, it will only discharge a debt of 85 cents. The legal tender law is redrawn to make legal tender depreciate in its purchasing power at 15% per year. Banking laws can be rewritten so that checking deposits are compelled to behave similarly. Money issue might be handled as follows. We may imagine

that the initial money issue was distributed over all the days of the year. Subsequently, every day the monetary authorities retire the money issued one year earlier and reissue money to the same face value amount. 85 cents of each reissued dollar goes to the citizens who are returning old dollars to the Central Bank. 15 cents to the dollar is the seigniorage that is available for resource absorption by the government.¹⁰ If operated in this manner, this Gesell-money scheme¹¹ will keep the nominal stock of money constant and thus stabilize the price level.

So it is not a case of inflation at all. In fact, all that this conceptual experiment has in common with a real world inflation are the consequences of inflation exhibited by a neoclassical monetary growth model of constant, foreseen inflation -- which is to say, very little. People will hold less of this taxed money than they would if it was not taxed; their attempts to economize on the holding of real balances will be associated with certain, rather trivial efficiency losses. But that is

¹⁰Some economists believe that the government revenue from the inflation tax on money explains why we have inflation. I do not share that theory but believe rather that politicians, economists, and central bankers tend to make a sorry mess of things and thus create outcomes that few of them really desire. At any rate, if the motive for persisting in inflationary policies were indeed the revenues they provide, then my depreciating monetary standard is a much preferable manner of going about it. Cf., fn. 12 below.

¹¹Silvio Gesell's stamped money scheme is today remembered chiefly because of Keynes' fascination with it at the time that he completed the General Theory. Cf., J. Maynard Keynes, The General Theory of Employment, Interest, and Money, London 1936, esp. at p. 357. My main argument in the text is, of course, that Gesell money would not eliminate the business cycle or, most to the point, prevent the occurrence of recessions of a Keynesian type. Keynes' delight with the Gesell scheme was not well-founded, therefore, but due rather to his characteristic failure to distinguish between nominal and real interest rates.

all.¹²

Suppose then we have an economy in equilibrium with a given stock of Gesell-money. Assume some event that produces a decline in the marginal efficiency of capital. If now, on balance, securities market investors underestimate the decline in real rates of return that the maintenance of equilibrium requires, there will emerge a speculative demand for money (despite its being depreciating), putting downward pressure on money income. From this juncture on, the recession would develop according to the standard Keynesian scenario.

In real terms, the analysis should come off exactly the same if we change the setting to that of a system which is initially in equilibrium on a 15% "foreseen" inflation time-path. For concreteness, assume that all agents watch the actual rate of money creation and gear their price-setting directly to this "anticipated" magnitude. In that case, prices will be rising at 15% per annum, but the Keynesian intertemporal coordination failure will not allow nominal aggregate demand to expand commensurably. The result would be unemployment in excess of the equilibrium rate of unemployment.

¹²Compared to a 15% steady inflation, the depreciating standard introduces the transactions cost of constantly "updating" the legal exchange value of money balances. But it removes the costs of intermittently revising prices. When prices of different goods are changed on different dates, changes in relative prices that tend to misdirect resources occur. The inflation becomes "ragged". (Cf., A. Leijonhufvud, "Costs and Consequences of Inflation," in G.C. Harcourt, ed., The Microeconomic Foundations of Macroeconomics, London 1977.) This is avoided altogether by the depreciating standard method of taxing money balances. This method also avoids, of course, disrupting the intended outcome of private contracts concluded prior to the governmental decision to raise revenues in this peculiar manner.

This type of stagflation -- if it occurs -- may be more persistent than the type of unemployment under inflationary conditions that we analyzed under the Natural Rate heading. Recall that in the monetarist analysis of deviations from the natural rate of unemployment, the errors in employment resulted from inconsistent beliefs about the real value of the money wage being paid. Since experience should in short order reveal erroneous expectations about this magnitude, we do not expect these deviations to be of very large magnitude or of long duration. In the Keynesian case, we have an error in the demand price for reproducible durable physical assets. At first, the demand prices are too low because the market rate of interest at which future expected earnings are discounted is too high. This error will be rectified as the recession develops. But the experience of the recession will at the same time erode expected future earnings and this effect will not be falsified by experience in short order.

The Gesell-money analogy teaches us that the statement that "inflation is caused by an excess supply of money" is misleading. Money stock growth in excess of real output growth is necessary to sustain an inflation. But the rate of money growth just sufficient to sustain inflation at the rate (firmly) expected by the public will correspond to a zero excess supply of money.

7. Friedman, in his Nobel lecture, warned that stagflation may be the inevitable outcome of persistently inflationary policies. High rates of inflation will make the economy increasingly inefficient. This, I have no doubt, is true. But it is not clear that these inflation-induced inefficiencies will predominantly be of a kind that reduces the demand

for labor. Nor does it seem particularly plausible that persistent inflation will produce a predominant and persistent inconsistency of beliefs between firms and workers of the particular kind that will generate unemployment in excess of the natural rate according to our earlier analysis. So a strictly monetarist monocausal explanation of stagflation is not very convincing.

Is inflation likely to turn into stagflation? My earlier analysis showed that we should not expect inflationary policies to erase the business cycle. It did not show that inflation would produce recession. On the contrary, the kind of inflation presupposed in that analysis -- the kind of inflation for which the stable Gesell-money system makes a close analogy -- comes so close to being neutral with regard to resource allocation that it makes the possibility of inflation producing its own recession seem utterly far-fetched. An inflation of the constant, predictable rate variety should not affect the marginal efficiency of capital (in real terms). Unless it does, a Keynesian (saving-investment) theory is not going to produce a conclusion at all different from monetarist theory.

So where do we stand now?

We have taken three different theories of unemployment and shown that each of them is consistent with simultaneous inflation. It is certainly useful to know that one must not expect inflation to eliminate unemployment problems -- important people have been confused about that -- but neither Stagflation Theory I, nor II, nor III seem to me adequate to an understanding of the American experience of the last fifteen or so years. We need not, I think, look around for a fourth theory of unemployment. It is the theory of inflation presumed in each of our three stagflation theories, that is no good.

8. Current inflation theory poses two polar cases -- unanticipated and anticipated inflation -- and would have us characterize an inflationary economy as located somewhere on the spectrum of possibilities defined by these two extremes. The analysis of unanticipated inflation assumes that people do not know what is going on. It will not help us explain stagflation because it implies overemployment. The theory of anticipated inflation assumes that people do know what is going on and, consequently, are able to predict inflation accurately enough so as very nearly to neutralize its effects. This is a perfectly logical model. But as a theory of the inflation it is nonsense. It is important to understand why it is nonsense.

Implicitly, the theory of anticipated inflation asserts that inflation can be cured overnight with the benefits of so doing in no measure offset by the social costs usually thought to accompany disinflation. It implies, to put it plainly, that the problem which we have agonized over for a decade and a half could be gone tomorrow.

Recall once more that our Gesell-money exercise is a perfect real terms analogue for the anticipated inflation case. It is obvious that the Gesell-world can be restored to "non-inflationary conditions"¹³ very easily. First, you simply abolish the 15% tax on its money -- a matter of a stroke of the pen. Second, recognizing that Gesell-denizens will demand larger real balances when money is not taxed, you increase the stock of nominal money sufficiently to avoid creating deflationary pressure on the economy. That is all. Naturally, one does not expect any unemployment to develop

¹³Admittedly, this is a somewhat paradoxical expression since the price-level is already constant in the Gesell-money exercise. But it is nonetheless precise, in context.

as a consequence of these measures.

How do you do it when you have to deal, not with the Gesell-analogue, but with a "real" anticipated inflation of 15%? The trick is a currency reform which I will call the "Blueback scheme". Assuming that the inflation rate has been fixed at 15% in terms of "greenback" dollars, the government should issue "bluebacks" that by law appreciate at a rate of 15% per year relative to greenbacks. On the day of the currency reform, T, the exchange rate of bluebacks for greenbacks is unity but, from that day onward, bluebacks grow in their legal capacity to extinguish debt contracted in greenbacks in this manner:

$$\$_{\text{Blue}} = \$_{\text{Green}} e^{(-.15)(t-T)}$$

This means, for instance, that a debt of \$1000 greenbacks due and payable at T + 10 years can be discharged by handing over (approximately) 192 blueback dollars. Note that, under the assumed conditions, neither debtor nor creditor would be at all upset by the passage of the blueback currency law. Both already knew, on day T, that 1000 greenbacks 10 years hence would have the purchasing power of no more than 192 "constant T-date dollars." No one will object.

Greenbacks will rapidly disappear from circulation since they are taxed and bluebacks are not. To avoid deflationary pressure in the transition to price-stability, therefore, somewhat more bluebacks have to be issued than the greenbacks retired. If this is only done right, the unemployment rate should be quite unaffected by the currency reform. We now have a zero inflation rate in the blueback currency.

Anyone who will accept the Blueback scheme as a solution for the world's inflation problems is welcome to it. If real world inflations

were adequately represented by the anticipated inflation model, the Blueback scheme is as perfect a solution as it is easy. If there are no takers for it, then we all reject the anticipated inflation model as a theory of the inflation.

On what grounds?

The initial conditions assumed for the exercise fail to replicate the conditions relevant to the present inflation in essential respects. The model assumes a believable pre-commitment by the government with regard to future rates of money growth, a pre-commitment which extends, moreover, into the indefinite future. (In our example, we assumed a constant rate of money creation to be guaranteed for at least 10 years beyond date T). Such pre-commitments must entail significant constraints on the discretionary monetary policy choices in future periods. In the case that we have analyzed the monetary authorities are bound to create money at a 15% rate -- neither more, nor less. The anticipated inflation model presumes what amounts to a monetary constitution so restrictive as to leave virtually no room at all for discretion by the money-creating authorities. The model must assume this for rational agents will not anticipate a rate of inflation that no one is trying to maintain.

As a theory the model is plainly wrong. No one is trying to produce any particular rate of inflation. People who do know what is going on will not "anticipate" the inflation. People who know what is going on will know that the future rate of inflation cannot be predicted (or its effects neutralized) because the relevant political authorities have refused to commit themselves to any particular future pattern of money growth. They are in effect asking private sector agents to make their long-term commitments

first while reserving their own options. Among these will be, in particular, all the possible "unanticipated" monetary policies that will falsify any assumptions about monetary policy on the basis of which private contracts may have been concluded. The only commitment of which policy makers (and their economic advisors) have given evidence is that of playing the short-run Phillips Curve, one period at a time, as that curve shifts, and tilts, and loops the loop.

This maximization of the short-period discretion of the policy authorities does not add up to a framework for monetary stability. It is not a rational regime. But it is what we have ended up with.

Standard inflation theory focuses our attention on the rate of inflation. The Blueback scheme shows that the inflation rate, within an otherwise stable and predictable monetary regime, can be brought down overnight. The rate is not our problem, the regime is.

9. The Riddle of Random Monetary Mismanagement. A useful theory should match its assumptions about what people know and can predict to the policy regime with which they have to live. Regimes that significantly constrain the future exercise of discretion by the monetary authorities will be called "constitutional". Commodity standards, fixed exchange rate systems, and systems obeying Friedman rules exemplify constitutional regimes. The present policy regime of the United States does not belong in this set. In analyzing the consequences of inflation, the alternatives to be compared are not price stability on the one hand with constant, predictable inflation on the other -- or a stable with a depreciating monetary standard. Instead, we should contrast a stable monetary regime with what may be

described as a Random Walk Monetary Standard (RWMS).¹⁴

Under the RWMS, the authorities decide one period at a time whether to accelerate, keep constant, or decelerate the rate of money stock growth. They are assumed to take only present period economic conditions and immediate political pressures into account and not to be constrained by concern with the more distant future. The rate of money stock growth at some future date t , \dot{M}_t , will not even be seriously contemplated until the last minute -- and then chosen on the basis of what seems most pleasant and convenient under the exigencies of that moment to those who happen to be in charge. The identity of policy makers a few years down the road cannot be predicted, nor do we know what kind of economic policy they will be guided by. To complete the picture, add that this random walk has shown upward drift in the past and that we have little reason to trust the stability of its coefficients.

If we look ahead only one period at a time, the RWMS theory will not differ much from a Monetarist model with comparable short-run uncertainty. Unanticipated monetary policy will cause rates of output and employment to differ from "natural" activity levels. A Keynesian habit of mind will make one pay particular attention to saving and investment. This means looking several periods ahead. Under the RWMS, the uncertainty attaching

¹⁴Or, more accurately, "Random Walk Monetary Growth-rate Standard". My UCLA colleague, Benjamin Klein, whom I would credit with the basic idea of approaching these problems from the standpoint of a theory of monetary standards, has suggested what amounts to a random walk in the price-level (rather than inflation-rate) as a suitable analytical characterization for the U.S. policy regime from the mid-thirties to the early 'sixties. Cf., his, "The Social Costs of the Recent Inflation: The Mirage of Steady 'Anticipated' Inflation," in Carnegie-Rochester Conference Series, Vol. III, Amsterdam 1976.

to forecasts of future price-levels increases very rapidly as one tries to peer further into the future.

Real earnings on the existing capital stock as well as prospective real rates of profit on new investment as perceived by producers will be reduced in a RW inflation for the following reasons. (1) A purely nominal increase in earnings will be taxed as a rise in real profits. This, of course, is a feature of any inflation, as long as the tax code remains nominally defined, and has nothing to do with its randomness. (2) Whenever producers fail to anticipate short-term monetary policy they will fail also to choose the right activity levels. In the RWMS environment, rational producers know that they must look forward to an indefinite sequence of short runs, in the course of which failures to produce at the rate where marginal revenue equals marginal cost are likely to be more frequent and the errors larger than they would be in a regime providing monetary stability. (3) In the RWMS environment, private contractual agreements become more uncertain as to their real outcomes. With contracting a less effective and reliable strategy, economic agents will try supplementary strategies for controlling the real terms on which they can obtain or dispose of resources. These supplementary strategies are apt to be political and, when successful, to result in price controls and other forms of costly governmental regulation.¹⁵ To the extent that increasing union activism in the RWMS environment may lead to a worsening of labor relations in industry, this too should be listed among the factors contributing to reduced prospective profits.

¹⁵ This argument is developed at length in Leijonhufvud, "Costs and Consequences....," op. cit.

On these grounds, then, we predict that investment, and hence the rate of economic growth,¹⁶ will be reduced under RWMS conditions. But from this inference one should not jump to the further conclusion that the reduced investment should also be predicted to produce a Keynesian increase in unemployment. One must first ask what is likely to happen to saving.

Consider first the returns on financial assets that savers might demand. On stocks, real earnings per share have fallen. On bonds (free of default risk), the maximum real rate of interest that can be found must have fallen by as much as has the general rate of profit in the economy. In addition, short real rates of interest can be expected to fall, not only by as much as the rate of profit, but also relative to it.¹⁷ This is so because the RWMS creates a strong incentive to postpone irrevocable commitments. The uncertainty that agents face concerning the price-level at any future date T can be sharply reduced simply by waiting. If it is possible to delay committing money to a project until you are closer to T, the final decision can be made with considerably less uncertainty about the money returns. Meanwhile, the resources awaiting definitive placement will have to be held in short-term, money-denominated assets. The flexibility premium that the market is willing to pay for the privilege of carrying resources

¹⁶Productivity growth will be lower in part because investment is lower. But productivity is also apt to be reduced because the "raggedness" of a RW inflation makes it more difficult to combine resources optimally. There is apt to be less in the way of productivity improvements, moreover, because managerial talent is absorbed in all the various ways of "playing the inflation." Cf., op. cit.

¹⁷The short real rate is compared to the profit rate here because it is not clear what deflator should be applied to nominal long rates in order to calculate real long rates under RWMS conditions. In addition, the RWMS is bound to cause a thinning out of long term markets, since borrowers and lenders alike can be counted on to be averse to the enormous price-level uncertainty that the RWMS creates over the long run.

over time without having them committed may be high enough, if the real rate of profit is also quite low, to cause real short rates of interest to be persistently negative.

These conditions should discourage the accumulation of financial assets by households and cause a redirection of saving into tangibles, such as consumer durables and housing. Household accumulation of tangible assets is, of course, itself a part of aggregate demand. For a Keynesian analysis of aggregate demand, we should compare changes in investment to changes in savers' demand for financial assets.

In principle, a Wicksell-Keynes recession might occur in the course of an inflation. We may well imagine that, along an inflationary time-path there develops a situation where the market "real" rate of interest exceeds the natural rate of interest (as in Wicksell); with investment exceeding full employment saving, the economy will then respond (as in Keynes) with a contraction of output and unemployment. It is a possible stagflation scenario. Hypotheses of this class have hardly been explored at all in the stagflation discussion. One reason for this may be that everyone knows that ex post real rates have been consistently very low and negative -- which makes it seem implausible that market rates are also "too high". But one should not underestimate the extent to which RW inflation increases risks and undermines the prospective real rate of profit. Real rates of interest have fallen far, but the marginal efficiency of investment perceived in American manufacturing has obviously fallen further -- for investment has declined. Although real rates of return are abnormally low, the possibility of an inflationary recession of this kind cannot be ruled out. But I do not think that it is in fact relevant to recent experience.

A random walk inflation does reduce the marginal efficiency of capital and will keep it persistently low. Yet, it is obvious that this has not led to persistent Keynesian unemployment. In fact, the American economy in the 1970s proved itself capable of generating new jobs at an unprecedented pace. Apparently, the RWMS discourages saving even more than it does investment.¹⁸ U.S. investment is low, but U.S. saving does not suffice to finance it. Foreign capital inflow into the U.S. has become substantial.

10. Stagflation IV: The random walk monetary regime depresses economic growth, both by reducing capital accumulation and by slowing down productivity increases. It will also exacerbate social tensions and undermine popular confidence in inherited political institutions and social arrangements. The last decade and a half of monetary mismanagement has been a self-imposed disaster for the United States the dimensions of which most American economists have only begun to recognize.

¹⁸The facts are not as uncomplicated as my text. Over the period 1965-78, Fellner's study shows a large rise in the ratio of tangible wealth to income and a large drop in the ratio of financial wealth to income. Financial wealth in real terms has indeed declined absolutely. But the proportion of current income allocated to the acquisition of financial assets has actually increased somewhat. Cf., William Fellner, "American Household Wealth in an Inflationary Period," in Contemporary Economic Problems 1979, American Enterprise Institute, Washington, D.C., 1979.

The reason for this rise in the ratio of financial saving to disposable income is that households cannot allow their real holdings of money, savings deposits and the like to shrink at the rate of their negative yield during the inflation. Once the volume of real cash balances demanded has been adjusted to their negative yield, for example, what is taken out by the inflation tax has to be replenished through saving each period. The portion of financial saving that is undertaken to offset the inflation tax on financial assets should be compared with the spending done by the government out of the proceeds of the tax in order to see what happens to the overall savings-"leakage" out of the circular flow. As indicated by the text, it is my conjecture that this leakage has declined by at least as much as has the investment-"injection" in the course of the American inflation.

The recessions that have been superimposed on this trend -- in 1970-71, 1975-76, 1980-? -- are probably best to be explained in standard monetarist fashion as due to decelerations in money growth that were "unanticipated" at least in the sense that the authorities' perseverance in pursuit of their stated goals was generally doubted.

This view of the macroeconomic problems of the United States uses a RWMS version of Stagflation III to explain the persistently disappointing performance by the American economy in this period, and uses Stagflation II to account for the sharper recessions that punctuate this depressing story. But it does not make use of Stagflation I at all. One does not need the "New Supply-side Economics" to explain the stylized facts.

What makes the energy problem a crisis is precisely what has turned the inflation problem into a crisis, namely, our persistent inability to look at the facts squarely and then do what must be done. What must be done with the inflation is to return to non-inflationary conditions within a new framework for monetary stability.¹⁹ To the extent that "new supply-side economics" is used to conceal this or serves to divert attention from it, it is a harmful doctrine.

¹⁹What must be done with the energy problem is even more obvious. Real oil prices in the U.S. must sooner or later be brought to the level where the price-elasticity of demand (net of domestic supplies) is about unity. This can be done by imposing our own taxes with the revenues staying in the country. Or it will be done by the OPEC cartel with the revenues going abroad. Obviously, there will never be any strain on the cartel at prices below this level -- any disagreement between its members can be resolved by a "positive-sum" move. For seven years, American policy has been based on the hope that a monopoly can be sweet-talked out of charging a monopoly price. When one cartel-member lets his price lag a few months behind the rest, this is apparently regarded as proving this hope well-founded.