

The Expectations Trap Hypothesis

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1. Overview

This paper is concerned with explaining the behaviour of base money growth in the United States during the 1970s. The paper takes as given that the Fed was responsible for the great inflation witnessed in that decade and that Fed policymakers were very averse to the prospect of high inflation. Why then, did the Fed do it?

The hypothesis put forth here is that the Fed was reluctantly drawn into inflating essentially because this is what was expected of it. *Given* a jump in private sector expectations, the Fed perceived its choice as one of either accommodating these expectations or risking a serious recession. *Given* the Fed's known proclivity for accommodation, private sector inflation expectations became a self-fulfilling prophesy; the Fed got caught in an 'expectations trap'.

Exactly *why* private sector inflation forecasts jumped the way they allegedly did is not explained; the 'expectations shock' is viewed here as an exogenous impulse. What is explained, however, is how particular institutional arrangements that govern the conduct of monetary policy can give rise to the *logical possibility* of an expectations trap. Monetary policy in the 1970s is alleged to have operated in such an institutional setting. The authors formalize these ideas within the context of a computable dynamic general equilibrium model and demonstrate how two exogenous shocks—one to productivity and one to expectations—can lead to a 1970s style 'stagflation'. The ability of their model to account for the facts lends some credence to their argument. The authors also support their interpretation of events by appealing to a number of selected statements made by Arthur Burns

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(Federal Reserve Chairman, 1970–77).

Overall, I view this paper as an impressive piece of work; it constitutes a wonderful example of how modern macroeconomic theory can be applied to important and difficult questions concerning the conduct of monetary policy and the interpretation of monetary history. The explanation of events is original and the application of quantitative theory innovative. Even if one is, as myself, not persuaded by the argument offered here, the paper lays down a standard and invites competing explanations to do better. In all these senses, the paper provides us with a valuable contribution.

2. The Expectations Trap

The basic idea of an expectations trap can be presented in terms of a very simple game. Suppose that there are two groups of players called ‘The Fed’ and ‘Households’. The Fed has two possible actions: it can either choose a low inflation Π_L or a high inflation Π_H . Likewise, households have two possible actions: they can either expect low inflation or high inflation. The utility payoff to each player depends not only on their own action, but on the actions of other players. With two players and two actions, there are four possible payoff configurations; this is represented in Figure 1.

Figure 1

		<i>HOUSEHOLDS</i>	
		Π_L	Π_H
<i>FED</i>	Π_L	1	-1
	Π_H	1	-1
		Π_L	Π_H
		-1	0

The payoff structure displayed in Figure 1 gives rise to what is called a coordination game. Players are imagined here to make their choices simultaneously (they cannot condition their behaviour on their opponent’s behaviour). As such, there exist two pure-strategy Nash equilibria to this one-shot game: one in which Households and the Fed coordinate on a low-inflation equilibrium (each receiving a payoff equal to ‘one’); and one in which they coordinate on a high-inflation

equilibrium (each receiving a payoff equal to ‘zero’).²

A question naturally arises here as to *which* of the two coordinated outcomes is more likely to transpire; this is the question of *equilibrium selection* posed by game theorists. Unfortunately, to the best of my knowledge there is still no good answer to this question.³ So, we see here that the prevailing institutional structure (the rules and structure of the game) gives rise to a fundamental indeterminacy: either outcome constitutes a logical possibility. In the game described above, *if* households expect (for whatever reason) that inflation is to be high, then the Fed, anticipating this expectation, will have an irresistible incentive to accommodate these expectations; to do otherwise would invite coordination failure. But *if* the Fed plans to generate a high inflation, then households are perfectly rational in expecting it; in this way, high expectations of inflation can be self-fulfilling. The authors exploit exactly this type of indeterminacy in their explanation of the great inflation.

In applying their theory, the authors invoke the assumption that household inflation expectations are subject to exogenous shocks.⁴ By specifying such a process, the theorist is in effect selecting an equilibrium. For example, in the context of the game above, suppose that I simply assume that households choose Π_L (or that households choose Π_L on the basis of some extraneous information).⁵ Conditional on this assumed behaviour, the only equilibrium is the low-inflation outcome. It would appear that the theorist is now free to choose any desired outcome simply by specifying the appropriate exogenous process for inflation expectations. One way to impose discipline on the exogenous expectations process is to estimate its parameters by fitting the model to the data. Obviously, this

²There is also a mixed-strategy equilibrium in which both the Fed and Households expect the low inflation regime with probability (1/3). In this case, a ‘coordination failure’ can occur with positive probability. By suitably modifying the game, one can also construct correlated (sunspot) equilibria that eliminate the possibility of coordination failure. For simplicity, I will concentrate solely on pure strategies.

³There are some axiomatic approaches to selecting among equilibria for coordination problems. Some are simple (choose the Pareto dominant one, if there is one), while others are more complicated; see Myerson (1991). The literatures on learning and on evolutionary games also attempt to address this issue.

⁴Alternatively, one might hypothesize that it is Fed behaviour that is subject to exogenous shocks. Technically, I do not believe anything would change aside from the interpretation of events.

⁵Note that technically, by allowing individuals to condition their strategies on some external shock or information, I have implicitly modified the one shot game described above.

exercise is not going to answer the question of why inflation expectations bounce around the way they do; but the estimated model can be used to answer the question of why the economy behaves the way it does, *given* that inflation expectations bounce around the way they do. Methodologically, this is no different than (say) a real-business-cycle theorist estimating the parameters of an exogenous process for technological change and then offering an explanation of the business cycle conditional on this estimated exogenous process.

The exact procedure employed by the authors in their explanation of the great inflation is to assume that, over the relevant sample period, there was one exogenous upward shift in inflation expectations *and* that this shift occurred coincidentally in the period of an adverse technology shock. (I think that it is important for readers to keep in mind that the model provides absolutely no *theoretical* rationale for why expectations move the way they do in response to the supply shock, however plausible the argument may sound on other grounds). The quantitative magnitude of the shift in expectations seems to have been calibrated to match some unspecified price level response in the period of the technology shock.

The model provides for an intriguing interpretation of economic events in the early 1970s. The choice of a modelling framework that features an equilibrium indeterminacy, exogenous expectations shocks, and accommodative monetary policy seems to fit well with a number of recorded statements made by policymakers in that era. For example, we know that Arthur Burns did not view monetary policy as the ultimate driving force behind inflation; at the same time, he recognized that inflation could not be sustained without money growth. In his view, monetary policy was severely constrained by a host of political and economic factors that compelled the monetary authority to behave the way it did; see Hetzel (1998). The game described above reflects this point of view; there is little the monetary authority can do aside from adopting the ‘accommodative’ Taylor rule employed by the authors in their quantitative investigation. This view also provides an explanation for why Burns fought so hard to have a system of wage and price controls put into place. To the extent that wage and price controls can be made credible, the public would be compelled to form low expectations of inflation and the monetary authority could therefore avoid being pushed into inflating.

3. Criticism

In any theory or explanation, a theorist must take a stand on what might appropriately be treated as exogenous for the purpose at hand. The tradition in monetary economics has been to hypothesize the existence of exogenous shocks to monetary policy (with expectations accommodating the structure of monetary policy). In this paper, the authors hypothesize the existence of exogenous shocks to expectations (with monetary policy accommodating the structure of expectations). I have no problem with exploring the implications of reversing the direction of causality in such a manner. However, in emphasizing the role of an exogenous variable, it would seem desirable for the researcher to first take some *measurements* of the variable in question; e.g., see Prescott (1986).

There are, in fact, many independent measures of inflation expectations for the time period studied by the authors. For example, Thomas (1999) reviews three popular survey measures of inflation expectations for the United States beginning in 1960. It is interesting to note that regardless of how they are measured, year-to-year forecasts of inflation since 1960 consistently display an ‘inertial’ tendency. In particular, over the period of generally rising inflation (1965–80), inflation expectations typically lagged (underestimated) the actual inflation rate. Likewise, since the disinflation of the early 1980s, inflation expectations have generally lagged (overestimated) the actual inflation rate.⁶

To give the reader a feel for this data, I reproduce in Figure 2 the actual GDP deflator inflation and the previous year’s forecast of inflation in the U.S. over the 1969–94 sample period. The inflation forecast is based on a survey of professional forecasters; the data here is taken from Figure 6.9 in DeLong (1997). As alluded above, a striking feature of this data is how expectations of inflation consistently underestimated the actual inflation rate through most of the 1970s. However, what is even more striking is how, in virtually each and every year, private forecasters were expecting a *disinflation*. Consider, for example, the inflation ‘take-off’ of 1973 and 1974 when inflation rose from 4.5% to 6.5% and 8.8%, respectively. In December of 1972, with inflation at 4.5%, forecasters were predicting for 1973 an inflation rate of 3.9%. In December of 1973, with inflation running at 6.5%, forecasters were predicting for 1974 an inflation rate of 5.4%. My reading of DeLong (1997) is that policymakers of this era generally shared in

⁶Dotsey and DeVaro (1995) also find that their measure of inflation expectations shows a persistent tendency to overestimate the actual inflation rate during the 1980s disinflation.

these ‘optimistic’ forecasts.

So my question to the authors is: Where is the evidence for this alleged expectations shock? In my view, the plausibility of their argument requires evidence of a sharp increase in inflation expectations that either precedes or is at least coincident with an increase in money growth. In the data, however, money growth leads inflation and hence leads inflation expectations by even a greater extent. One could try to argue that the sharp rise in base money creation beginning in 1970 (see their Figure 2) was engineered by the Fed in order to accommodate the rise in inflation expectations expected to occur around 1974–75, but I think that this is stretching things. In my view, a more plausible interpretation of this data is that inflation expectations are not subject to unaccountable shocks but rather are fully endogenous, responding optimally in an adaptive manner (Muth, 1960) to new information as it becomes available.⁷

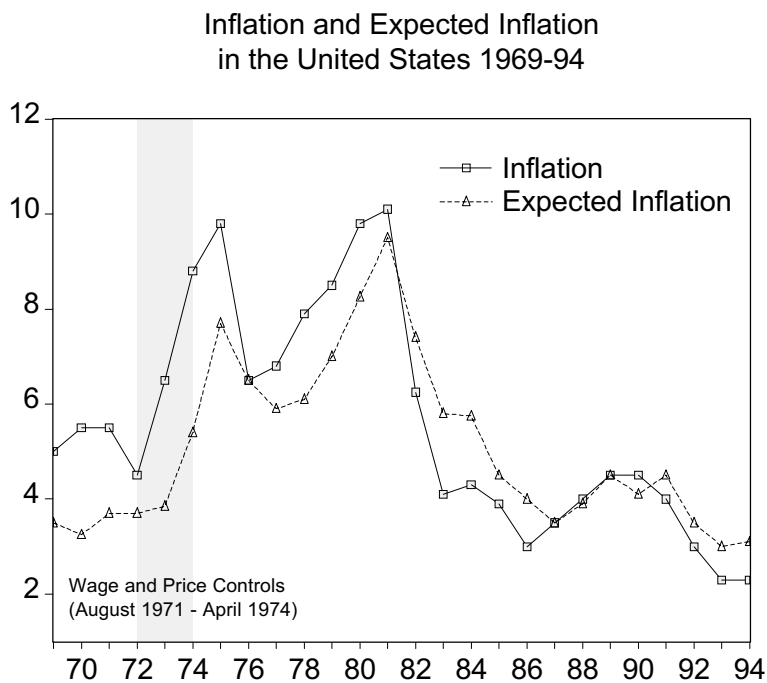


Figure 2

⁷See, for example, Andolfatto and Gomme (2000).

4. An Alternative Hypothesis

When I view the historical evidence over the last century, this is what I see. There were three (possibly four, depending on how you measure things) inflationary episodes: 1916-20, 1940-46, and 1965-80. (Here, I take issue with authors' dating of the 'inflation take-off'; to my eye, the take-off seems to have occurred in 1965 with the 1969-70 disinflation representing a cyclical deviation from the general trend of rising inflation). Each of these episodes is characterized by three things: (1) a major shift in government expenditure and/or outlays; (2) pressure to finance these outlays with paper (new debt or new money); and (3) a breakdown of a prevailing international monetary institution.

In the first great inflation, we had the first world war and the breakdown of the gold standard. In the second great inflation, we had the second world war and a breakdown in the gold standard (admittedly, this gold standard was abandoned sometime earlier in the 1930s, so the timing is not quite right here). In the third great inflation, there was the Vietnam war in addition to the 'war' on poverty and a breakdown of the Bretton Woods fixed exchange rate system, which formally ended in 1971 when Nixon abandoned the dollar's peg to gold.

In my view, the appropriate exogenous event would seem to be whatever caused the major shift in government expenditure. In the case of a war, this might be modelled as an exogenous (and transitory) shift in the general public's preferences for output that is to be consumed in the enforcement of national property rights. People know what comes with war: an increased scarcity of goods for private use; mounting fiscal deficits (nominally denominated, for that matter); a weakening of peacetime institutions; and an irresistible temptation to resort to new money creation.

The Vietnam War was peaking in the late 1960s and early 1970s. Military expenditures were placing great strain on the American economy as real resources were being consumed in unproductive ways. Presidents Johnson and Nixon were naturally reluctant to raise taxes in order to finance the outlays required to meet the growing demands of the war effort and the growing demands for social spending. The arithmetic of the government budget constraint implies that there must have been a growing reliance on other forms of finance; in particular, the issuance of new paper (new money and debt) and/or the default on existing paper (monetizing the debt).⁸

⁸The unanticipated inflation of the early 1970s implied a significant implicit default on out-

Seigniorage revenue is often dismissed as ‘small potatoes’, but it is likely that reported statistics greatly understate seigniorage as a revenue source under a system of fixed exchange rates. When the United States rapidly increased the rate of base money creation beginning in 1965, the relevant ‘tax base’ under Bretton Woods was the *world* money supply; i.e., foreigners were conceivably contributing significant resources to the U.S. as inflation around the world soared owing to the proliferation of U.S. dollars. As foreign countries struggled to maintain control over their domestic monetary policy through a series of currency re-evaluations, the fixed-exchange rate system began to dismantle. The inflation also made it increasingly painful to maintain the value of its currency at \$35 per ounce of gold; in 1971 the gold standard was abandoned and Bretton Woods ceased to exist.

Note that it was the fiscal authority (Nixon) which abandoned the gold standard. Why? One argument is that by doing so, the Fed (Burns) was relieved of an important constraint on the rate of money creation (it was no longer compelled to maintain the nominal anchor to gold). This institutional change implied that the Fed was more susceptible to political pressure for accommodative behaviour. This political pressure took the form of demands for more spending (on both Vietnam and the Great Society), demands not to increase taxes (for fear of crippling consumer demand in the weak 1970s economy), and demands not to increase the rate of government debt issue (bad for business psychology). What is the Fed to do in such a situation? One answer is that the Fed could do what it did: i.e., reluctantly accommodate these demands by increasing (or not decreasing) the rate of money creation. The narrative I provide here is not inconsistent with Burns’ own views. For example, according to Burns’ testimony to the U.S. Congress in August 1974 (Hetzel, 1998 pg. 35):

“The current inflationary problem emerged in the middle 1960s when our government was pursuing a dangerously expansive fiscal policy. Massive tax reductions occurred in 1964 and the first half of 1965, and they were immediately followed by an explosion of Federal spending...Our underlying inflationary problem, I believe, stems in very large part from loose fiscal policies.”

In 1979 he gave a speech called ‘The Anguish of Central Banking’ where he states (Hetzel, 1998, pg.34):

standing nominal debt; see Auerbach and Kotlikoff (1995, pg. 300).

“Once it was established that the key function of government was to solve problems and relieve hardships—not only for society at large but also for troubled industries, regions, occupations, or social groups—a great and growing body of problems and hardships became candidates for government solution...Their [government programs] cumulative effect...was to impart a strong inflationary bias to the American economy...My conclusion that it is illusory to expect central banks to put an end to the inflation that now afflicts the industrial economies does not mean that central banks are incapable of stabilizing actions; it simply means that their practical capacity for curbing inflation that is driven by political forces is very limited.”

According to my interpretation, while general expectations were important, they simply reflected the nature of a fundamental fiscal shock; i.e., expectations were not an indeterminate entity, as argued by the authors. In fact, I will go so far as to argue that inflation expectations were likely a very important factor in *curtailing* the rate of inflation. Imagine, for example, what might have happened if Americans (for some unexplained reason) always expected zero inflation. I conjecture that the political demands for new money would have been even easier to accommodate. In contrast, the model provided by the authors would suggest the absence of inflation.

5. Conclusion

The authors’ interpretation of the most recent great inflation is to treat the general rise in inflation over the late 1960s and early 1970s as two separate episodes. The first episode is explained in terms of the ‘Phillips curve hypothesis’; the second by an expectations trap. The monetary authority at that time is described as being ‘weak’ in the sense of operating in an institutional environment that encouraged it to accommodate possibly whimsical private sector expectations (as apposed to being weak in the sense of readily capitulating to the demands of the fiscal authority or other political forces). They hypothesize the arrival of an adverse technology shock which temporarily increased the inflation rate; and the arrival of an expectations shock which propagated the higher inflation forward in time (as the monetary authority accommodated the higher inflation expectations, thereby making them self-fulfilling).

As usual, many different interpretations of history are possible; the best way in which to understand the causes of the 1970s inflation is still an open question. However, it is encouraging to note that while the explanations offered above may differ, they share a common policy implication. In particular, one way to prevent inflationary outbursts is to endow the monetary authority with a credible commitment mechanism (possibly through legislation), which prevents it from ever capitulating to the incessant demands for new money.

6. References

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