THE GENESIS OF INFLATION AND THE COSTS OF DISINFLATION

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ABSTRACT

This essay asks how high inflation arises and why it is
costly to eliminate. Specifically, the paper discusses the roles
of price rigidity and credibility problems in explaining the costs
of disinflation; the puzzle of persistent inflation triggered by
onetime macroeconomic shocks; and the case for returning to
adaptive expectations in theories of inflation.

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I. INTRODUCTION

The postwar experience of the United States includes significant periods of low inflation, such as the early 1960s and mid-1980s. During those periods, the Fed seemed to have largely eliminated the problem of inflation. But low inflation did not last forever. Mishaps including the Vietnam War and the rise of OPEC produced several episodes of high inflation in the late 60s and 70s. As this paper is written, a new oil crisis threatens another rise in inflation. And once high inflation arises, it proves stubbornly persistent. Rather than receding after the initial fiscal or supply shock is over, inflation continues until the Fed becomes sufficiently unhappy to tighten policy. At that point inflation falls, but at the cost of a recession.

This essay asks how high inflation arises and why it is costly to eliminate. The ideas that shocks such as OPEC trigger inflation, and that disinflation reduces output, are commonplace, and economists often accept them without scrutiny. One theme of this paper is that, when examined closely, these phenomena are surprisingly hard to explain — especially if one insists on assuming rational expectations. I discuss why common stories about "inflation inertia" and "wage-price spirals" are inadequate. I then draw on my recent research to suggest how better explanations can be constructed while maintaining rational expectations. Finally, I consider the possibility that this assumption should be relaxed.

Section II asks whether there is a fully rational explanation for the costs of disinflation. When Paul Volcker or Margaret Thatcher decides to reduce inflation, why does the economy suffer a recession? New Keynesian economists

blame the inflation inertia arising from staggered wage and price adjustment, while New Classicals emphasize the difficulty of making a promised disinflation credible. I make three points. First, in the absence of credibility problems, staggered price setting does not make disinflation costly. The view that it does arises from a misinterpretation of the literature on staggering. Second, explanations based solely on credibility problems are also flawed. Imperfect credibility does not explain why announced disinflations cause recessions on average — why they produce more recessions than booms. Finally, a combination of New Classical and New Keynesian theories — a model with both credibility problems and staggering — can potentially explain the costs of disinflation.

Section III considers another approach to explaining the costs of disinflation: replacing the assumption of rational expectations with adaptive expectations. Introducing adaptive expectations makes it easy to explain the costs, since disinflation necessarily entails negative inflation surprises. Adaptive expectations are widely unpopular on methodological grounds. But should they be? I explore the possibility that adaptive expectations are a rule of thumb that agents optimally choose when fully rational forecasts are costly.

Section IV leaves the subject of disinflation to ask how persistently high inflation arises in the first place. I emphasize that the direct effect of an "inflationary" shock such as OPEC is a one-time rise in the price level. inflation persists only if the initial rise in prices creates expectations of further inflation, which the Fed then accomodates. Why do expectations behave that way? Again, expectations may simply be adaptive. With rational expectations, there are game-theoretic models of monetary policy in which the expectation of persistence is self-fulfilling. But the models have other equilibria without persistence. I consider reasons that a regime with

persistence is a likely outcome. One possibility is that accomodation of an adverse shock provides information about policymakers' tastes.

Section V concludes by discussing the policy implications of the analysis.

II. RATIONAL EXPECTATIONS AND THE COSTS OF DISINFLATION

Suppose that Alan Greenspan, testifying before a Congressional committee, declares that the level of inflation is intolerably high. He plans to disinflate by slowing money growth substantially, regardless of the output costs. Conventional wisdom suggests that this policy will cause a recession. This view is supported by historical experience: Romer and Romer (1989) identify six postwar U.S. episodes in which the Fed decided to disinflate and find that output fell each time. This section asks whether we can explain the output costs of disinflation while assuming rational expectations.

A. Staggered Price Setting

The first point is that nominal price rigidity — and in particular the staggered timing of price adjustment — is not enough to explain the costs of disinflation. Instead, as argued by Sargent (1983), the Fed's lack of credibility is an essential part of the story. Here I depart from some New Keynesian economists, who argue that staggering creates inflation inertia that only a recession can break. Blanchard and Summers (1988), for example, claim that "on the ... 'Keynesian view,' even credible disinflation is likely to increase unemployment for some time because of the inflationary momentum caused by overlapping price and wage decisions." This view is based on the work of Taylor (1979, 1980) and Blanchard (1983, 1986), who show that staggering slows the adjustment of prices to monetary shocks. However, as shown in Ball (1990a), this literature has been misinterpreted.

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The problem with the inertia view is a confusion of levels and changes. Blanchard and Taylor show that the level of prices adjusts slowly to a shock to the level of money. The costs of disinflation depend, however, on the adjustment of inflation — of the growth rate of prices — to a fall in money growth. It is easy to blur this distinction in thinking informally about "tight money." But the Taylor-Blanchard result does not carry over to growth rates: although staggering causes price level inertia, it does not cause inflation inertia.

We can see this point by comparing two examples presented in Figures 1-2. First, suppose that the money stock has been constant for some time and is expected to remain constant (Figure 1). At some point, the Fed announces that money will decline linearly until it reaches a lower level. Assume full credibility: the public believes that the Fed will keep its promise, and it does. Despite this assumption, and regardless of how fast the money stock falls, the Taylor-Blanchard model predicts a recession. Intuitively, with staggering some firms set prices shortly before the announcement for periods lasting beyond it. These prices are based on the initial level of money, and are too high once money starts to fall. The overhang of high prices and resulting recession can be long-lived, since no cohort of price setters is willing to go first in cutting prices substantially.

Now alter the example by assuming that the growth rate of money is initially constant and then declines linearly until it reaches zero. This policy — a disinflation — implies a concave path for the level of money (Figure 2). Ball (1990a) determines the resulting output path in the Taylor-Blanchard model, assuming again that the decline is credibly announced at its outset. The results are very different from the previous example, and quite surprising. The Fed can disinflate quickly, although not instantly, without causing a recession.

Specifically, if individual prices are fixed for a year, money growth can decline from its initial level to zero in about eight months. Indeed, this path (or any slower one) causes a boom.

These results seem counterintuitive because our intuition is trained with examples of changes in levels. A major difference in the growth rates example is that the overhang of prices set before the announcement is not a serious problem. Just before the announcement, prices are set above the current money stock in anticipation of further money growth. If money stops growing instantly, then these prices are too high and there is a recession. But if money growth, while falling, remains positive for a short time, the money stock quickly passes the highest price set before the announcement. At this point, the money stock can be stabilized costlessly. The possibility of quickly overcoming the overhang contrasts with the levels example, in which prices are stuck at a level that money has fallen below permanently.

While this point explains why disinflation need not reduce output, it does not explain why disinflation causes a boom. The source of the boom is rather subtle. As shown by Taylor (1979), staggered price setting makes the aggregate price level an average of past and future money stocks. Since a slowdown in money growth implies a concave path for money, Jensen's Inequality implies that an average of past and future money is less than current money. The price level is less than the money stock, causing a boom, unless disinflation is so fast that this effect is outweighed by the overhang of predetermined prices.[1]

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[1]Taylor (1983) studies disinflation in a model of staggered wage—setting based on U.S. labor contracts. He finds that disinflation must be quite slow to avoid a recession. The main source of this result is the fact that multi—year contracts specify different wages for different years. This time—variation implies that wages depend only on expectations of current money, and thus eliminates the expansionary effect of the concave money path. Ball (1990a) discusses this case and argues that it is less important empirically than the one

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The finding that quick disinflations cause booms clearly does not fit the experience of the United States. Thus we should not take this result as a serious empirical prediction. Instead, it shows that we must look beyond staggered price setting to explain the costs of disinflation.

B. Credibility Problems

Many economists argue that disinflations are costly because policy announcements are not credible. Sargent (1983), for example, blames the costs of the Thatcher disinflation on Thatcher's political weakness, which created doubts that she could carry out the five year-plan announced in 1979. In the example of a linear disinflation, the assumption of full credibility is strong. At the start of disinflation, firms must believe in a substantial fall in money growth even though the decline so far has been small. And firms know that policymakers have an incentive to renege on their promises: once prices are set, unexpectedly high money growth raises output. Nonetheless, even if price setters do not believe in disinflation, policymakers such as Thatcher and Volcker sometimes do disinflate. In this case, money growth is unexpectedly low, and output falls.

Is it really so easy to explain the costs of disinflation? In my view, explanations based exclusively on credibility problems — like those based only on staggered price setting — are flawed. In particular, credibility problems cannot explain why announcements of disinflation lead on average to a recession. To see this point, consider a discrete-time example in which firms adjust prices every period but do so before observing current money. Suppose that money has been growing at a constant rate, but the policymaker announces a disinflation.

in the text.

If the announcement is fully credible, then inflation falls in tandem with money growth and the policy is neutral. (This example lacks the staggering that causes a boom.) If the announcement is pure hot air — if policymakers never disinflate, and the public knows it — then neither money growth nor inflation changes, and output is again constant. A recession is possible only if the announcement is partially credible — if price setters are unsure of whether the policymaker will renege. In this case, firms base their prices on expected money growth, and a recession occurs if actual money growth is lower.

The problem, of course, is that a boom occurs if money growth is higher than its mean. With rational expectations, deviations from expected money growth average to zero, and the expected output effect of an announced disinflation is zero. This result is not empirically plausible. At least occasionally, policymakers' promises of disinflation are partially credible; surely Thatcher's and Volcker's announcements in 1979 had some effect on inflation expectations. And these episodes are not neutral on average. The Thatcher and Volcker recessions may have been severe because inflation fell even more than expected. But these recessions do not appear to be balanced by booms when tough-talking policymakers disinflated less than expected.[2]

C. Combining Credibility Problems and Staggering

The results discussed so far are negative. With rational expectations, neither staggered price setting nor lack of credibility is sufficient to explain the effects of disinflation. Ball (1991) presents a more positive result: a

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[2]Peter Howitt's discussion below suggests that "people judge the central bank's intentions by looking at what it does rather than what it says" — in other words, announcements never have any credibility. My sense is that inflation forecasts and inflation premia in interest rates react to Fed statements, such as Congressional testimony by the Chairman. Future empirical research should consider this question more carefully.

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combination of the two phenomena can provide an explanation. In the previous
example, credibility problems did not influence the expected output effects of
disinflation. Perhaps surprisingly, the results are different with staggering.
A disinflation path that produces a boom with full credibility can on average
produce a recession with partial credibility.

Another example illustrates the effects of staggering. Suppose that the Fed
announces a linear decline in money growth, and that the decline is slow enough
to produce a boom with full credibility (again, the decline can be quick). At
each instant during the disinflation, there is a constant hazard that the Fed
will "renege," which means that it stops reducing money growth. If the Fed
announces a decline in money growth from 10% to zero but reneges when it reaches
6%, money growth stays at 6% forever. In this example, the path of output
depends on whether and when the Fed reneges. Ball (1991) shows that the expected
output effect is negative if the hazard of reneging is large enough. Indeed, the
"expected sacrifice ratio" — the average output loss divided by the average fall
in inflation — is monotonically increasing in the hazard of reneging.

To understand this result, recall the case of full credibility. In that
case, firms setting prices at the start of disinflation believe that money growth
will fall considerably in the future. As a result, they greatly reduce their
price increases, and this causes aggregate inflation to fall considerably even
though most prices have not adjusted. In contrast, when firms fear that the Fed
will renege, they set higher prices. Inflation does not fall enough to match the
fall in money growth that occurs as long as the Fed has not yet reneged. Current
tightening plus the prospect of future easing causes a recession.

These results are similar to some of Sargent's (1983) informal arguments
about Thatcher (see pp. 57-58 and p. 91). Sargent assumed that Thatcher was

serious about launching her five-year plan, but thought it likely that she would eventually be driven from office or forced to change her policy. At that point, a "U-turn" to looser policy would occur. Sargent blamed the recession occurring when he wrote on the fear of this future policy shift. Ironically, formalizing this New Classical view requires the New Keynesian assumption of staggered price setting. Without staggering, the possibility of future policy shifts cannot reduce output on average.

In Ball (1991), the behavior of the monetary authority is exogenous. A natural next step is to endogenize the hazard of reneging, perhaps in an Alesina (1988) model of political equilibrium. Multiple equilibria appear likely. With full credibility, quick disinflations cause booms. Thus, if price setters believe a promise of disinflation, the monetary authority has little incentive to renege. On the other hand, if price setters expect a U-turn, disinflation causes a recession. The recession creates political pressure for looser policy — — and by loosening, policymakers justify the public's skepticism. Sargent stresses the need for a dramatic "once-and-for-all, widely understood and widely agreed upon" change in policy regime (p. 57). This regime change can be interpreted as a shift from the costly-disinflation equilibrium to the equilibrium with credibility.

III. ADAPTIVE EXPECTATIONS

The previous section establishes that, in principle, the costs of disinflation are consistent with fully rational expectations. This conclusion does not imply, however, that theories based on full rationality are correct. An alternative way to explain the costs of disinflation is to assume that expectations are adaptive — that price setters expect inflation to continue at

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its current rate (or some average of recent rates). Under this assumption, expectations systematically fail to adjust to relevant information, such as policy announcements. Adaptive expectations appear empirically plausible; for example, surveys of inflation expectations typically follow actual inflation with a lag. The assumption explains easily the costs of disinflation, since a fall in inflation implies a negative surprise. Sophisticated stories about price adjustment and credibility problems are unnecessary.

Nonetheless, most economists reject adaptive expectations on methodological grounds. Since Fischer (1977), even Keynesians have argued that monetary non-neutrality should be explained by relaxing price flexibility but not rational expectations. Introducing adaptive expectations is a major retreat from this position. But a retreat may be in order, because it appears possible to provide respectable foundations for adaptive expectations. Not long ago, the assumption of nominal price rigidity was considered a hopelessly ad hoc departure from rationality. Starting with Mankiw (1985) and Akerlof-Yellen (1985), researchers have established that rigidity can be a near-rational rule of thumb — or fully rational in the presence of menu costs. A parallel argument establishes that adaptive expectations are a near-rational rule of thumb, or fully rational with costs of making inflation forecasts.

As emphasized by early critics of rational expectations (e.g. Shiller, 1978), this assumption is not equivalent to economists' traditional definition of rationality. The idea that agents make statistically optimal forecasts using all available information follows from the traditional concept — the absence of unexploited gains — only if optimal forecasts are costless. And clearly this condition does not hold. Exploiting all public information requires following the behavior of the Fed and many aggregate variables, and learning how to

interpret this information. Some large firms employ forecasters and Fed watchers to perform this task, but the costs are too large for the corner drug store. It is easier for the drug store to estimate future inflation by extrapolating past inflation.[3]

More firms would incur the costs of rational forecasts if the gains were large. But the gains appear small, because adaptive forecasts are nearly rational. There is strong serial correlation in U.S. inflation, and sudden large movements are rare. The change in annual inflation has exceeded three percentage points in only six of the last 35 years. Thus there is usually little difference between adaptive expectations and perfect foresight. Since large shocks such as OPEC are hard to forecast even with rational expectations, the differences between adaptive and rational forecasts are even smaller. The menu cost literature shows that mistakes in price setting of a few percentage points can have little effect on profits (Ball and Romer, 1990). Thus firms have little incentive to reduce their mistakes through more accurate forecasts.

Rappaport (1984) provides formal evidence that rational and adaptive forecasts are similar in the postwar United States. He finds that deviations from rationality implied by adaptive expectations are too small for agents to detect through serial correlation and orthogonality tests on forecast errors. Adaptive forecasts could appear rational to the agents who make them.

If adaptive expectations impose only small losses on price setters, how can we blame them for the costly recessions that result from disinflation? The

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[3]Perhaps firms do not make any explicit inflation forecasts. They might simply use rules of thumb in which increases in nominal prices are based on previous increases in input prices. This behavior is equivalent to basing relative prices on the relative prices of inputs and assuming that inflation will remain constant.

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answer is again parallel to work on menu costs: adaptive forecasts (like nominal price rigidity) have negative macroeconomic externalities. If firms fail to anticipate a disinflation, they set prices too high relative to money, causing a fall in aggregate real spending. This recession harms all firms by shifting in the demand curves that they face. Each firm ignores this effect in deciding whether to pay for more accurate forecasts because it views aggregate spending as exogenous. This externality can be large: while a three percent change in a firm's relative price has little effect on its profits, a three percent fall in aggregate spending is a significant recession.

These arguments are strengthened by the work of Haltiwanger and Waldman (1989), who consider a model in which some agents have adaptive expectations and others have rational expectations. The behavior of the economy can be close to the pure adaptive case even if the proportion with adaptive expectations is small. The crucial assumption is that firms' desired relative prices are not very sensitive to aggregate fluctuations. In this case, if some firms raise prices adaptively, the others raise prices almost as much to avoid lower relative prices. Aggregate inflation responds slowly to a fall in money growth even if the decline is foreseen by those with rational expectations. Thus the costs of disinflation can be explained by small deviations from rational expectations by a small part of the economy.

We have seen that the costs of disinflation can be explained with either rational or adaptive expectations. Whether disinflation in actual economies involve deviations from rationality — whether price setters systematically underestimate the fall in inflation — is an open question.

IV. THE BEGINNING OF INFLATION

So far I have assumed that the economy starts with a legacy of high inflation and asked why it is costly to disinflate. But how does high inflation arise in the first place? As explained below, it is easy to explain occasional temporary increases in inflation. It is more difficult to explain why a rise in inflation persists.

A. The Initial Impulses

In the postwar United States, major increases in inflation have followed macroeconomic shocks such as increased spending on Vietnam and rises in oil prices. According to textbooks, these shocks are inflationary because they shift out the aggregate demand and aggregate supply curves. This explanation is incomplete, however, because a shift in these curves implies only a one-time rise in the price level. The rise in prices is a temporary increase in inflation. If the initial shifts in the curves were the end of the story, inflation would soon return to its initial level. By itself, the AS/AD model does not explain why inflation persists until the Fed creates a recession.[4]

This point holds regardless of whether the Fed accomodates the initial shock. If there is an adverse supply shock and the Fed holds aggregate demand constant, the price level rises and then falls — temporary inflation is followed by temporary deflation. If the Fed shifts aggregate demand to prevent a recession, the initial rise in prices is larger, and it is never reversed. But the result is still a one-time rise in prices rather than persistent inflation.

B. Adaptive Expectations

Like the costs of disinflation, the persistence of increases in inflation is easy to explain if we overcome our qualms about adaptive expectations. With

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[4]Many previous authors make this point, but it is still commonly ignored.

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adaptive expectations, an initial increase in inflation raises expected inflation. To avoid a recession, policymakers must accomodate these expectations by prolonging high inflation, which in turn keeps expected inflation high. High inflation continues until policymakers accept a recession to disinflate. Accomodating an increase in expected inflation produces persistence even though accomodating the direct effects of a shock does not.

The persistence of inflation with adaptive expectations and accomodative policy can be interpreted as the traditional "wage-price spiral." Suppose that workers set nominal wages at the start of each period to hit a target real wage that depends negatively on unemployment. Prices are a fixed markup over wages. When a shock causes an initial rise in inflation, the expectation that inflation will continue causes workers to raise nominal wages. The wage increases are passed into price inflation, and expected inflation remains high. Inflation slows only if workers reduce their target real wages, and hence their nominal increases, and this does not happen as long as the Fed keeps unemployment constant.

C. Self-fulfilling Expectations

Are adaptive expectations essential for explaining persistent rises in inflation, or is persistence consistent with rational expectations? The answer might appear to be the latter. With accomodative policy, the expectation that inflation will persist induces the Fed to keep inflation high — the expectation is self-fulfilling. Thus adaptive expectations are rational. This idea can be formalized in the Barro-Gordon (1983) model of the repeated game between the Fed and the public. The model has both a "discretionary" equilibrium in which the Fed produces high inflation and a "reputational" equilibrium with low inflation. One can modify the model by adding an exogenous, serially uncorrelated shock that

occasionally pushes inflation above the Fed's target. In this case, there is an equilibrium in which inflation is initially low but rises permanently to the discretionary level when a shock arrives. Again, the direct effect of the shock is temporary, but the expectation of persistence is self-fulfilling.

The weakness of this approach is that there is another equilibrium without persistence — one in which the shock raises inflation only in the current period. Expected inflation stays low in the period after the shock, and so the Fed can costlessly return inflation to its previous level. In terms of the wage-price spiral, there is an equilibrium in which wage-setters do not expect inflation to continue. They stop raising nominal wages, which causes prices and money to stop growing as well.[5]

Further, it is natural to focus on this regime, because the one with persistence involves a "sunspot" — a variable that affects the equilibrium only because it is expected to. The sunspot is past inflation, which, with serially uncorrelated shocks, has no effect on current fundamentals. Macroeconomists (e.g. McCallum, 1983) often reject sunspot equilibria because the behavior of expectations is arbitrary. To see this point, note that there is another equilibrium in which a Red Sox pennant permanently raises inflation — the public expects the Red Sox to be inflationary, and the Fed accomodates these

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[5]Blanchard (1986) presents a model of staggered wage- and price-setting with a unique equilibrium that he calls a wage-price spiral. Blanchard simply shows, however, that the direct effect of a shock occurs slowly, with wages and prices moving alternately. The total effect on the price level is just the effect that would occur immediately with nominal flexibility. A shock does not trigger a rise in inflation that continues indefinitely. Zeira (1989) presents a modification of Blanchard's model in which a shock does set off persistent inflation. This result arises from the interaction of staggering and discounting, which implies that higher inflation raises the discounted real wage perceived by workers and lowers the real wage perceived by firms. For moderate inflation and plausible discount rates, the resulting inertia appears small.

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expectations. Our intuition suggests that a previous rise in inflation is a more natural source of current inflation than a baseball game. But I think this intuition is flawed. We believe in strong serial correlation in inflation fundamentals (probably because we see serial correlation in actual inflation). In fact, the fundamental effects of macroeconomic shocks on inflation disappear quickly.

D. Private Information

Can modifications of the Barro-Gordon framework make inflation persistence more plausible? Canzoneri (1985) assumes that only the Fed observes shocks to inflation, so the public cannot tell whether a rise in inflation is accidental or caused by Fed policy. In this case, if inflation is initially low, a rise in inflation must last beyond the current period. Intuitively, expected inflation must rise in the following period to make the initial shock costly to the Fed. Without this "punishment," the Fed would fake inflation shocks to reduce unemployment.

Unfortunately, the empirical relevance of this model is limited because major inflation shocks are observable. OPEC and Vietnam are inflationary even though their initial effects are clearly exogenous to the Fed, making punishment unnecessary.[6]

E. Learning from Accommodation

Ball (1990b) presents another approach to the problem of persistence. In that paper, a one-time shock has longlasting effects because a policymaker's response provides information about his tastes. The model follows Backus-

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[6]Canzoneri assumes that the Fed has private information about money demand. While this assumption is plausible, money demand shocks are not a major source of rises in inflation.

Driffill (1985) and Barro (1986) in assuming that there are "strong" policymakers who care only about inflation and "weak" policymakers who also care about unemployment, and that the public does not observe which type is in charge. In addition, rather than a shock that unavoidably raises inflation, I introduce an occasional supply shock that worsens the output-inflation tradeoff. The policymaker chooses inflation after observing the shock, and thus decides whether to accomodate it with higher inflation.

This model produces the following equilibrium. If expected inflation is low, the weak policymaker chooses low inflation to masquerade as the strong policymaker, which keeps expected inflation low. Low inflation continues until there is an adverse supply shock. At that point, continuing to imitate the strong policymaker would create very high unemployment. For some parameter values, the weak policymaker is unwilling to accept this cost even though he kept inflation low before the shock. The policymaker produces high inflation, which reveals that he is weak and thus raises expected inflation in the next period. Once expected inflation is high, the weak policymaker must continue to produce high inflation to avoid high unemployment. Thus the rise in inflation persists. (The model assumes that the policymaker changes occasionally, and so a strong policymaker eventually arrives and disinflates.)[7]

These results establish that a one-time shock can have persistent effects if it provides information about policy. Of course, whether this is the correct explanation for persistence is an open question. More broadly, as with the costs

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[7]The model has multiple Nash equilibria, including one in which a rise in inflation does not persist. However, the regime with persistence is the unique equilibrium satisfying Maskin and Tirole's (1988) "Markov" criterion, which requires that expectations depend only on fundamentals. The other equilibria are supported by non-Markov punishment strategies.

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of disinflation, it is unclear whether the correct explanation involves rational or adaptive expectations. The puzzle of one-time shocks with persistent effects deserves further research.

V. CONCLUSIONS

This paper asks why macroeconomic shocks trigger persistent inflation, and why disinflation is costly. Although the two questions raise different issues, the broad answers are parallel. The answers do not lie in inherent properties of price setting; an inflationary shock need not cause a wage-price spiral, and staggered price setting need not impede disinflation. Instead, the behavior of inflation depends on expectations. One can build rational-expectations models of this behavior based on credibility problems and imperfect information about policymakers. Alternatively, one can simply assume adaptive expectations.

The importance of expectations has moderately optimistic policy implications, because expectations can be changed without major changes in the economic structure. If price setters systematically fail to forecast disinflation, the Fed could reduce the costs of disinflation by reducing the costs of making accurate forecasts. This could be accomplished by replacing ambiguous policy statements with clear announcements of disinflation. In addition, since credibility influences the output-inflation tradeoff, disinflation would be less costly if policymakers made a practice of sticking to announced plans.

The persistence of inflationary shocks might be reduced by a policy of accomodating the shocks' direct effects but then returning inflation to its original level. If price setters came to expect this policy, persistence could be choked off without higher unemployment. On the other hand, a promise that

inflation will rise temporarily and then fall might be too subtle to convey
convincingly. The dilemma posed by supply shocks is not easy to escape.

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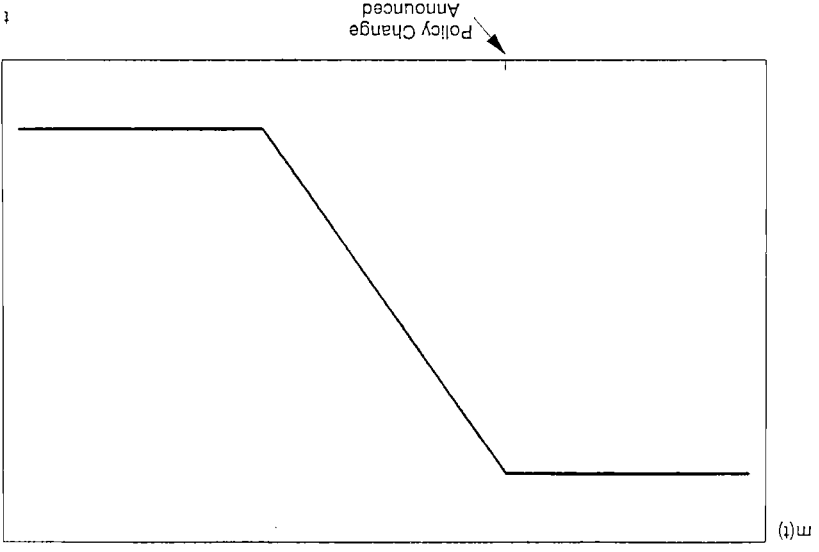Zeira, Joseph. "Inflationary Inertia in a Wage-Price Spiral Model." European Economic Review 33 (1989), 1665–1683.

Figure 1
A Fall in the Level of Money

Figure 2
A Disinflation