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Defending Zero Inflation: All for Naught*

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During the past several years, I have spent a considerable amount of time promoting price stability as the overriding objective for the Federal Reserve System. In this essay, I would like to discuss some of the criticisms that this position has generated, to respond to those criticisms, and to comment on a conference that the Federal Reserve Bank of Cleveland held last year on the subject of price stability.

Briefly put, my advocacy of price stability stems from three deeply held beliefs. The first is that a central bank can, over time, control the price level of goods and services denominated in its own currency, but it cannot control the growth of output (potential or actual). The second is that a credible commitment to an inflation objective enables a central bank to promote economic efficiency and growth (potential and actual). And the third is that price level stability, popularly called *zero inflation*, is superior to inflation rate stability.

Among economists, support for my first assertion is nearly universal. There is also widespread agreement on the second point. I find it is the last proposition that is most contentious, particularly when people attempt to compare the costs of achieving price stability to the costs of stabilizing the inflation rate at the status quo.

Perhaps the best way to begin to discuss this sort of comparison is to call your attention to the summer 1990 issue of the Federal Reserve Bank of Minneapolis' *Quarterly Review*, which contains an article entitled "Deflating the Case for Zero Inflation." The essay, by Rao Aiyagari, is well written and summarizes some common opinions about

the costs and benefits of stabilizing the price level. The author has performed a valuable service by reviewing a portion of the relevant literature on this subject, and through referencing his work, I am also responding to criticisms I hear from many others.

Aiyagari concludes that the benefits of being at zero inflation are small compared to the costs of getting there and that most of the costs associated with nonzero average rates of inflation can be adequately addressed by adopting institutional changes that do not require specific inflation targets. I think his conclusions are unwarranted. And as much as I like his article, I believe that if it is not read carefully it could give the false impression that economists have already decided that the costs of achieving price stability exceed the benefits that would result.

The Critics' Framework

There are two dimensions to my critics' argument that the costs of pursuing a zero inflation target would outweigh the benefits of reaching that target. The first is that the advantages of achieving zero inflation are small. The second deals with the costs of moving from a 5 percent trend rate of inflation to a zero inflation world. This is the transition cost argument, which essentially says that even if zero is the

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place to be, getting there is not worth the ride.

Typically, the economic models that are used to do optimal inflation analysis have few, if any, real-world frictions. Markets are assumed to clear continuously and costlessly, information is free, and expectations—if they play any role at all—are rational. Money has few effects on the real economy in such a world, so it is not surprising that the benefits of zero inflation in this scenario are small. People merely plan on the nominal values of transactions changing predictably over time. If money doesn't matter much for the performance of the nonfinancial economy, then what the monetary authorities do to money is of little importance.

Last November, we held a conference at the Federal Reserve Bank of Cleveland that brought together several economists to examine the state of the art in this area. (The proceedings of this conference are forthcoming in a special issue of the *Journal of Money, Credit, and Banking*.) Using some sophisticated techniques, participants presented analyses of the optimal rate of inflation under a variety of assumptions about the tax environment. Some addressed the optimal inflation issue explicitly; some, only implicitly.

Based on the papers presented, I think it is fair to say that our profession has yet to deliver a compelling theoretical treatment of the optimal rate of inflation that deserves to be embraced as the new conventional wisdom. This is not particularly surprising. Economic understanding progresses through intellectual competition among alternative, stylized models. Often, it takes a great deal of time before these models yield results that are immediately useful for policy analysis.

Inflation and Taxation

One friction that economists often take into account when considering how society might benefit from zero inflation is the role of the tax system. An early contribution to the optimal inflation literature was written by Milton Friedman, who in 1969 presented an analysis showing that the optimal inflation rate is negative (equal to minus the real interest rate). In 1973, Edmund Phelps modified Friedman's analysis and argued that if the government had only welfare-distorting taxes at its disposal, then the optimal inflation rate might be positive after all. The intuition for this result is straightforward: The optimal inflation tax should be such that the marginal welfare cost of revenue raised by inflation equals the marginal welfare cost of revenue raised from other sources.

The Friedman and Phelps analyses of inflation as part of an optimal taxation system sparked a literature that is still growing strongly today. For example, a paper presented by Thomas Cooley and Gary Hansen at our price stability

conference concludes that the inflation tax is less burdensome than either capital or labor taxes. But their results are based on the peculiar assumption that the effective capital tax rate at 5 percent inflation does not change when the inflation rate becomes zero. This is an assumption that surely underestimates inflation's deleterious effect on the capital stock. Another presentation, by V. V. Chari, Lawrence Christiano, and Patrick Kehoe, shows that the Friedman rule holds even in the presence of distorting taxes: The best monetary policy yields an inflation rate equal to minus the real rate of interest. In their model, the optimal inflation rate has a large variance around its trend (about 20 percent) because it is desirable for the government to use its fixed nominal debt, in conjunction with variable inflation, to generate changes in the real burden of its debt over the business cycle.

Another conference participant, Lawrence Summers, predicts that the optimal taxation literature will teach us nothing useful about the optimal inflation rate. He argues that seignorage is simply not an important revenue source and that the public cares about inflation for other reasons. This point has also been made in a paper by David Lebow, John Roberts, and David Stockton (1990).

The interaction between inflation and our current tax system, especially as it applies to income generated by capital, represents one of the more significant channels through which nonzero inflation can exact economic costs. This channel of distortion is often not taken seriously, because people think that its effects are minimal or that it would be easy to index the tax system. For example, Aiyagari claims that the superior solution would be a change in the tax system, not a change in our monetary policy goals. Correcting the tax code is a good idea, of course, but until that happens, what possible excuse is there for not letting the monetary authorities do what is necessary to improve social welfare?

It is clear that our horrendous inflationary experiences in the 1970s and early 1980s induced the limited inflation indexation of the current tax system. However, the job is far from complete. Capital gains, corporate depreciation and interest expenses, and personal interest income remain untouched by efforts to index the tax system for inflation. Complete indexation of the tax code, however desirable it may be, will be extremely difficult to achieve. For example, even the bracket indexation implemented by recent tax reform does not fully protect taxpayers from bracket creep (nonlegislated increases in marginal tax rates created by positive inflation), as David Altig and Charles Carlstrom (Forthcoming) have shown.

Will another inflationary experience like that of the 1970s be required to induce further progress on tax index-

ation? I fail to understand why some feel that these inflation/tax interactions are a significant drag on the economy, yet argue that only Congress should be concerned with the problem. The problem exists because of the interactions between inflation and a tax system based in current dollars. Therefore, it seems to me that the responsibility for minimizing these costs lies as much with the monetary authorities as with Congress. Doesn't it make more sense for monetary authorities to try to correct the inflation part of the problem, rather than simply to hope that Congress will implement changes that it may be unable or unwilling to pursue?

Drifting in Uncertain Waters

Another area of concern is the role of uncertainty as a source of inflation costs. How important are the price system distortions that arise from uncertain inflation? There is a class of models—the market-clearing, imperfect-information paradigm associated with Robert Lucas (1972) and others—in which inflation uncertainty harms the economy by distorting the *period-to-period* relative price signals that facilitate the efficient allocation of scarce resources.

Despite the pervasive intellectual influence exerted by the Lucas framework to this day, the empirical evidence accumulated since the development of the paradigm in the early 1970s has not been entirely supportive. This point is not lost on critics, who think that the lack of evidence on short-term distortions should persuade us that inflation uncertainty is simply not that important to social welfare.

But surely the relative price/aggregate price confusion stressed by the Lucas-type models is a special type of uncertainty. The failure to find significant effects arising from uncertainty that is resolved within a few quarters tells us next to nothing about the type of long-run uncertainty with which the zero inflation position has always been fundamentally concerned.

Indeed, Laurence Ball and Stephen Cecchetti (1990) have demonstrated that it is precisely the uncertainty occurring over extended time horizons that is most affected by the average inflation rate. This is one reason why I favor a price level target. An inflation rate target enables the price level to drift without bound, and with no enforcement mechanism to ensure that inflation mistakes will be corrected, the long-run variance of the price level is infinite.

Concern about this longer-term uncertainty is essentially what Summers stressed at our November conference. From his viewpoint, inflation is important because money is an intertemporal standard of value. When people have reason to believe that this standard will erode over time, they invest numerous resources to protect themselves. Those who have nominal debt outstanding will drag their feet in paying it

back, while creditors will invest in ways to accelerate the collection of funds. The private gains to self-protection are clear, as are the social costs.

Recent experience is the best testimony to the real resource costs of inflation. During the 1970s, people could see that inflation accelerated with each passing year. They guessed, reasonably at the time, that financial assets were of limited value in protecting their wealth from the inflation tax. Consequently, farmland, commercial and residential property, and precious metals became much more expensive as people sought to shelter their wealth. Not only was time spent seeking out these investments, which was socially wasteful, but the resource misallocation itself resulted in a much greater waste of land, labor, and capital that society is still paying for today.

It is difficult to comprehend how efficient planning within the public and private sectors could not be inhibited by this type of long-run uncertainty. Furthermore, the intuition that long-run inflation uncertainty is costly has empirical support: In cross-country comparisons, the variability of inflation tends to be negatively related to economic growth. (See the 1989 work of Kevin Grier and Gordon Tullock and the 1990 work of Lebow, Roberts, and Stockton.) I find that the case for reducing price level uncertainty is far more compelling than a cursory analysis might indicate.

Transition Costs

In evaluating the costs of getting to zero inflation, economists almost always use models in which markets do not clear or do not clear without cost. Gone is the market-clearing, flexible price, rational expectations model. In its place is a model with price contracts that make the transition to zero extremely costly. The source of the friction is usually not entirely explicit, but the implication is that we must assume some frictions. It is these frictions, coupled with the inability of markets to clear, that make ending inflation so costly.

But isn't it sensible to assume that the implicit sources of frictions that make lowering the inflation rate costly would also contribute to making inflation costly in and of itself? For instance, a variety of explicit and implicit nominal contracts already exist among people, and a transition to zero inflation could alter the real values of payments from those originally intended. But surely the entire institutional apparatus that generates these contracts must involve resource costs that are positively related to the average rate of inflation.

One should not compare the costs of getting to zero inflation in non-market-clearing models, where such costs are high, to the benefits of being at zero inflation in frictionless, continuously clearing models, where the benefits are low. If we are going to use a model with frictions to measure

the cost of getting to zero inflation, then we should also use such a model to examine the benefits of being there. This is one reason I am skeptical of so many cost/benefit estimates of reducing inflation, including Aiyagari's.

I am also skeptical about transition cost estimates that do not account for the possibility that a price stability objective will be regarded as credible by the public. Economic theory and reasonable model simulations persuade me that with credible precommitment, a central bank can greatly minimize private sector planning errors during the transition period. I think that much of the disagreement among economists on the size of transition costs revolves around the ability of a central bank to credibly commit itself to achieving its objective.

Credibility is achieved only after delivering what one promises, and delivering consistently. There is an argument that a central bank could never be credible about price level stability because the fiscal authorities need not adjust spending and taxing policies to accommodate the central bank. As a theoretical proposition, this can be true under certain circumstances. However, I know of no evidence indicating that realized budget deficits, or prospective deficits, have had any influence on the inflation trend in the United States. For instance, the Federal Reserve engineered a major disinflation during the last decade, a period in which the federal budget was widely regarded as being out of control.

The relationship between monetary and fiscal policy could be thought about in a different way. When tax policy is implemented, the fiscal authorities try to estimate effective tax rates based, in part, on expectations about future inflation trends. After the tax law is set, the Federal Reserve could change the inflation trend and the incidence and amount of the taxes. From this point of view, the lack of a commitment to a path for the price level allows the monetary authority to dominate fiscal authorities in determining effective tax rates. By restricting the Federal Reserve to follow a rule, the fiscal authorities would remove the ability of the Federal Reserve to compete with the Congress in setting tax policy.

Conclusion

History suggests that economic performance is not very good in countries that try to deal with inflation through government indexation of the tax code, transfer payments, bank accounts, and other nominal transactions. At the same time, private contracting arrangements in these and other countries never seem to go far enough in protecting people, presumably because of the costs associated with implementing and maintaining the process. People do not like inflation, and when it becomes high enough for long enough, they demand that it end. From a political point of view, perhaps

a 5 percent inflation rate could be tolerated forever in the United States. Not long ago, however, this nation resorted to wage and price controls to combat an inflation rate of 4 percent.

Economists must think about inflation scientifically. They should want to know how inflation, even at 5 percent, affects resource allocation and social welfare. This is the spirit in which Rao Aiyagari frames his analysis. I think that economists are just beginning to undertake the truly hard work of modeling the effects of inflation on economic welfare, and what little we do know about these effects indicates to me just how much more work lies ahead. One direction that seems particularly worth pursuing is modeling the resource costs of coping with the intertemporal uncertainty about the value of money.

If the essential issue for price stability skeptics is that they prefer a rule for some relatively low rate of inflation, then at least we would be in agreement on the benefits of a credible commitment. I favor a rule for price level stability, but even a rule for a low and specific inflation trend would eliminate the distortions currently induced by uncertainty about future policy and the future inflation trend.

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