

## COMMUNICATIONS

# RATIONAL OPTIMIZING, MONETARY THEORY, AND WELFARE

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### Introduction

Observers of monetary affairs—central bankers, congressmen, economists and others—commonly believe that unanticipated increases (decreases) in money growth produce short-term increases (decreases) in real output.<sup>1</sup> This view stems from theoretical argument, as well as ingenious empirical studies exploring the relation between changes in money and national income.<sup>2</sup> The proposition appears in modern textbooks and articles intended for non-economists.<sup>3</sup> It is part of the conventional wisdom about money's impacts and forms the underlying theoretical basis for discretionary monetary policy.

Despite the proposition's credentials, we contend that a certain amount of care must be exercised in its interpretation. A failure to clearly distinguish between real income based on individual utility

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<sup>1</sup>See Barro and Fischer (1976), Taylor (1982), and Hoover (1984) for recent surveys of the perspectives of economists on this issue.

<sup>2</sup>The nature of the theoretical argument can be found in Lucas (1972), Sargent and Wallace (1975), and Barro (1981). Friedman and Schwartz (1982) and Kormendi and Meguire (1984) illustrate the depth and range of the evidence.

<sup>3</sup>See Darby (1976), Johnson and Roberts (1982), and Barro (1984) for representative textbooks. An example of an able nontechnical presentation of the main ideas is provided in Batten and Stone (1983).

maximization and its narrower measured counterpart, real GNP, can make the proposition appear inconsistent with the presence of scarcity. Furthermore, unless the profession's widely held methodological conviction that theory should rest on "economically intelligible substitution effects, not unintelligible 'disequilibria'" (Lucas 1972, p. 225) is jettisoned, unanticipated changes in money growth will always decrease real income in the broad theoretical sense.<sup>4</sup>

These points have been implicit, at least, in the works of others.<sup>5</sup> Our purpose is to draw them into sharper focus and to underscore their implications for the conduct of countercyclical monetary policy.

### The Standard Rationale for Money's Impact on Real Output

In modern monetary theory, each individual is rational; within the bounds of existing property rights and transaction/information costs, utility increasing trading opportunities are exhausted. Specialization is carried out to the greatest possible extent and utility maximizing individuals search (gather information regarding higher-valued uses of resources) to the extent that the expected gain from additional search equals the marginal cost of searching. Only new information that changes peoples' assessments of future events changes relative prices and the allocation of resources.<sup>6</sup>

Unanticipated increases in monetary growth have real effects, say Barro and Fischer (1976, p. 160), because if "individuals *incorrectly* attribute some part of the price rise to a real (temporary) demand shift, price expectations—and therefore actual prices—will rise less than proportionally with money." Likewise, Friedman and Schwartz (1982, p. 415) note that sellers and producers "have no way at the outset of knowing whether the change in demand for their products is a change relative to the demand for other products, to which it is in their interest to react by expanding or contracting output, or a change in general nominal demand, to which the appropriate response is an adjustment of prices." They reach the conclusion, therefore, that "[d]eviations of nominal income from its anticipated growth path, produced by deviations of monetary growth from its anticipated path, will produce deviations in output from the path that would be

<sup>4</sup>A classic discussion of the meaning of broadly defined real output and wealth can be found in Fisher (1930, ch. 1).

<sup>5</sup>This literature extends back, at least, to Simons (1936) and Knight (1937). An important impetus for the contemporary research of the issue was the work of Milton Friedman. See, for example, Friedman (1953, 1961).

<sup>6</sup>See Lucas (1972) and Barro (1976) for formal models incorporating these ideas.

indicated by real factors alone" (p. 413). Batten and Stone (1983, p. 12), meanwhile, contend that "only when the change in spending (motivated by the monetary disequilibrium) has been identified as permanent will producers change their prices and return production back to its normal rate." The upshot is that "[i]n this setting, monetary fluctuations lead to real output movements in the same direction" (Lucas 1972, p. 120).

### A Potential Confusion

An unanticipated increase in the growth rate of money must draw more resources into measured production to increase real GNP in the short-run.<sup>7</sup> Since the quantity of inputs supplied depends on the perceived real return from employment, resource owners must *believe* that real wages have risen. Furthermore, these changed beliefs must be reconciled with the general understanding that changes in money growth do not change underlying production technology, and hence resource productivity, nor preferences with respect to leisure and work. In the standard theory, the reconciliation turns on costly information.<sup>8</sup>

Resource owners must cope with the fact that information regarding equilibrium relative prices is costly. A surprise monetary injection complicates their problem. A new price level—not immediately perceivable at zero cost—must be discovered. This lack of perception (confusion) on the part of individuals results in an expansion of measured output with resources that otherwise would have been engaged in higher-valued activities. Specifically, search for higher real wages (unemployment), consumption of leisure, or buffer stocks are reduced. When individuals become fully acquainted with the higher rate of money growth, they return to the pre-surprise optimal allocation of activities.

The standard argument for the impact of money on measured output rests squarely on the proposition that owners transfer resources away from higher-valued activities (search and leisure) to lower-valued

<sup>7</sup>The arguments typically refer to labor because capital and other factors are regarded as fixed in the short run.

<sup>8</sup>Foreshadowing our comments, Barro (1981, p. 74) notes:

A significant weakness of the approach is the dependence of some major conclusions on incomplete contemporaneous knowledge of monetary aggregates, which would presumably be observed cheaply and rapidly if such information were important. The role of incomplete current information on money in equilibrium business cycle theory parallels the use of adjustment costs to explain sticky wages and prices with an associated inefficient determination of quantities in Keynesian models. The underpinning of the two types of macroeconomic models are both vulnerable on *a priori* grounds.

employment. Real output in the broad economic sense must necessarily fall.<sup>9</sup> Only if individuals were engaged in a non-optimal combination of work, search, and leisure, could a monetary innovation increase real output in the broad sense. But this possibility is inconsistent with rational optimizing within the constraints of costly information.

If, as suggested by conventional theory, individuals are systematically confused by non-systematic monetary injections, then *measured* real income will increase during an episode of unanticipated monetary growth. This is so, however, only because the “productivity” of search and the “income” from leisure—factors that contribute to real income—are not included in measured income. Simply stated, measured output is not sufficiently broad to capture all the relevant economic impacts of a change in monetary growth.

Given the unavoidable exogenous shocks that buffet the economy, individuals adjust in wealth-maximizing ways. Consequently, given institutional constraints, uncertainty, and costly information, the economy travels along a path that maximizes the value of broadly defined total output. If the standard story of money’s short-run effects were true for this broad definition of real output (one that includes the returns from search, etc.), unanticipated increases in money growth, by temporarily pushing the economy above this long-run path, would generate an increase in total real wealth. At a very intuitive level, this would seem to deny a world of scarcity since *additional* nominal money, for all intents and purposes, can be created at negligible cost.

There is evidence that the distinction between broadly defined real output and its narrower measured counterpart is not lost on individuals. For example, Lucas (1973, p. 334) found that “the [Phillips] tradeoff tends to fade away the more frequently it is used, or abused.” The empirical evidence that the correlation between unanticipated money changes and measured real output appears to weaken with the frequency of monetary shocks indicates the shocks themselves are wealth reducing. As individuals gain more experience with monetary variability, they more quickly interpret rising nominal prices as reflecting money shocks and learn not to reallocate resources away from wealth-maximizing activities.<sup>10</sup>

### Implications for Countercyclical Policy

The distinction between real output in the theoretical sense and the concept governing its national income measure complicates the

<sup>9</sup>See Alchian (1969) and Alchian and Demsetz (1972) for discussions of the economic value of search, “unemployment,” and buffer stocks.

<sup>10</sup>See Kormendi and Meguire (1984) for additional evidence on the effects of increased monetary variability.

debate on the effectiveness of countercyclical monetary policy. Consider Robert Barro (1976, p. 26) on the limited potential for successful countercyclical policy:

It is only to the extent that the monetary authority has superior economic information (as well as the appropriate objectives), and to the extent that providing information to the public is costly, that there is a call for departures from the constant growth rate rule. Further, if the attempt to use countercyclical policy to exploit the superior information results in a higher variance of money, . . . there would be a tradeoff between the beneficial effects from the countercyclical elements . . . and the adverse effects from pure monetary variance.

The problem with Barro's statement is that even if the monetary authority had superior information—and this information were too costly to disseminate directly to the public and there were no social costs associated with increased monetary variance—once it is recognized that unexpected changes in mean rates of monetary growth generate reductions in broadly defined real output, the “beneficial effects” of countercyclical monetary policy are unclear. Unanticipated changes in money growth both reduce and redistribute wealth. To maintain there are “beneficial effects” of changes in the quantity of money, requires an extra-theoretic welfare criterion where redistributive effects compensate for reductions in wealth. No such welfare function is commonly explicit in monetary policy analysis and consequently the limited a priori case for discretionary policy is even more problematic than Barro suggests.

Arguments against discretionary policy based on the central bank's inability to correctly judge the leads and lags involved, or the incorrectness of the central bankers' motives, in one sense concede too much. They presume, implicitly at least, that a positive relation between measured real output and changes in money growth provides a theoretical basis for effective discretionary policy that is simply impractical due to the problem of lags, etc. But if discretionary monetary policy drives resources away from wealth-maximizing allocations, even a perfect ability to increase measured output will not necessarily enhance welfare.

## Conclusion

At any given time, there is a stock of information regarding the value of alternative uses of resources. With rational optimizing, this information is embedded in relative prices that coordinate wealth-maximizing resource flows from one use to another. When the growth

rate of money changes unexpectedly, it produces short-run distortions in relative prices, thereby reducing the stock of economic information. The reduction in the stock of economic information is a reduction in aggregate wealth, even though the discoordination of economic activity that results occurs simultaneously with systematic changes in measured real output.

Explicit recognition that an unanticipated acceleration (or deceleration) in money creation is not a source of wealth in the broad sense generally used in economic theory, but rather a disordinating activity, would, in our view, put the conduct of monetary policy on a sounder theoretical footing. It would also, as a practical matter, make it even more difficult to remain sanguine about the effectiveness of countercyclical monetary policy. If monetary authorities are interested in promoting long-term economic growth, not the redistribution of existing wealth, they should behave predictably and reduce central-bank generated surprises in money growth to zero.

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