# MONETARY REFORM FROM A COMPARATIVE-THEORETICAL PERSPECTIVE

ANTHONY M. CARILLI, GREGORY M. DEMPSTER, AND J. RORY ROHAN

> Monetary policy can be discussed on two very different levels: the tactics of policy—the specific aims that the monetary authorities should take; and the strategy or framework of policy—the ideal monetary institutions and arrangements for the conduct of monetary policy that should be adopted.
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> [I]t is important to consider fundamental changes in our monetary institutions. Such changes may be neither feasible nor urgent now. But unless we consider them now, we shall not be prepared to adopt them when and if the need is urgent.
>
> Friedman (1987), pp. 361-62

The revival of institutional approaches to economic theorizing over the past three decades has led to a reevaluation of the fundamental propositions on which our current monetary system is based. Austrian economists and fellow-travelers have been at the forefront of this revival and have produced numerous proposals for comprehensive reform of the payments system. These proposals generally share typical features such as the elimination of discretion on the part of monetary authorities; however, they also tend to reflect the particular theoretical views of the authors, and often appear incompatible with each other despite their shared analytical foundation. The result is a somewhat confusing array of reform proposals, each of them deriving their support almost solely from the expositors of the theories on which they are based.[1]

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[1]Examples include Hayek (1979), Bernholz (1986), White (1983), Selgin (1988), Yeager (1983), Rothbard (1991), and Paul (1992).

THE QUARTERLY JOURNAL OF AUSTRIAN ECONOMICS VOL. 7, NO. 3 (FALL 2004): 29-44

A comparative analysis, however, could reveal some broader principles by which reform proposals may be evaluated. This exercise might prove to be more valuable than arguments over which theoretical perspective is the correct one. We attempt just such an exercise in this paper. Beginning from a broad definition of "monetarism" coined by Yeager (1997), we categorize various monetary cycle theories according to a common framework, and then use the framework to identify essential components of the Austrian view and assess the macro-economic outcomes they imply under a well-known reform proposal: the free banking system of Selgin (1988, 1997) and Selgin and White (1987, 1994). We find that there is general compatibility between free banking and Austrian thought, so that the efficacy of such a reform does not depend crucially on peculiar assumptions about the nature of macro instability.

## Austrian and Quantity-Theory Variants of Monetary Cycle Theory

Our goal is to examine the potential effects of a particular reform with respect to an entire class of business cycle theories. To begin, we choose a broadly "monetarist" framework in an attempt to define the full spectrum of thought represented by these theories. Yeager (1997) defines a monetarist as "an economist convinced by the evidence that *the quantity of money and changes in it* dominate the total flow of spending in an economy" (p. 19, emphasis added). We offer this definition as a general description of monetary business cycle theories rather than a specific formulation of the medium-term relationship between GDP and money supply—it is broad enough to encompass not only traditional monetarism, but any theory that has as its ultimate basis a concept of monetary "disequilibrium" or coordination failure, including the Austrian theory. Thus, we can include in our analysis all those theories that ascribe the ultimate causes of boom and bust to monetary (as opposed to "real") factors, although the term monetarist is more appropriately applied to particular formulations of monetary cycle theory, those that emphasize the quantity-theory relationship between money, prices, and output.[2]

Austrians and (quantity-theory) monetarists share a good deal of ground in their business cycle analysis. They agree, for example, that money matters in the explanation of business cycles, in direct contrast to mainstream theorists who posit an "equilibrium-always" relationship between the supply and demand for money. Both approaches champion a system whereby the systematic over-expansion of credit would be eliminated by taking away the scope for discretionary manipulation of the money supply. Furthermore, both schools

[2]To the extent that New Keynesian economists focus on nominal price and wage rigidities in their business cycle explanations, they too could be considered monetary cycle theorists in the sense we use the term. In fact, Mankiw and Romer (1991) recognize this explicitly. On the relationship between New Keynesian and "old" monetarist theory, see Yeager (1997, pp. 281–302).

stress the importance of allowing market prices and market interest rates to adjust in response to exogenous shocks to supply and demand. In fact, it would be correct to say that the basis of Austrian business cycle theory is a distortion in interest rate signals, while the basis of monetarism is a distortion in price signals (or, more correctly, a disequilibrium price level). Adherents of the two approaches differ, however, in their understanding of the underlying propagation mechanism that manifests itself in a business cycle downturn. Essentially, the quantity-theory approach focuses on misallocations in the employment of labor, while Austrians focus on misallocations in the employment of capital. In each case, the market signals available to economic actors are systematically distorted by monetary mismanagement, causing the formation of expectations that are biased in predictable directions.

According to the quantity-theory approach, a business cycle downturn is the direct result of a money supply level that is insufficient to meet the quantity of money demanded at the prevailing price level.[3] A price signal distortion develops due to the fact that the average price level, unlike individual relative prices, can only adjust very slowly to the long-run equilibrium level. Employers are the first to perceive an increase in real wage pressures as demand for their products fails to match previous expectations. This causes them to reduce the amount of labor employed and the quantities of goods and services produced immediately. The expectations of laborers, however, lag behind in their adjustment to the new conditions, delaying the fall (or decreased growth) in nominal wages that is necessary to bring about a new full-employment level of output.[4] It is these long and variable periods of misalignment in the formation of expectations that constitute the contractionary phase of the business cycle. Once expectations begin to adjust toward conformity with the new monetary conditions, the process reverses itself and the recovery to trend output growth and employment ensues. Therefore, an analysis of the business cycle implications of alternative monetary regimes from the quantity-theory perspective must concentrate on the prospects for encouraging a quick adjustment in expectations in response to any exogenous shocks to the demand for or supply of money.

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[3]An anonymous referee reminds us that quantity-theory monetarism actually encompasses two alternative explanations for economic downturns: the so-called "Phillips curve" explanation we focus on here, and the "plucking model" explanation developed by Friedman (1969, 1993) that precludes an initial boom. In either case, however, the cause of the bust is the same: an insufficient level of money supply at the prevailing price level. For more on the "plucking model" explanation, we refer the reader to Garrison (1996).

[4]This is especially likely when there is excessive uncertainty associated with unanticipated variation in the money supply. The result is a general reluctance on the part of producers to lower the relative prices of their goods until they see evidence of a corresponding fall in input prices. On this phenomenon, see Yeager (1986, pp. 224–29).

In contrast to the traditional monetarist approach, Austrians see the boom as an artificial creation of easy money. According to the Austrian theory, the boom begins when a shortage in the loanable funds market is masked by an increase in the money supply.[5] The artificially low interest rate gives "false" signals of a decrease in time preference. A decrease in time preference signals to entrepreneurs that consumers desire a longer and narrower structure of production, so producers invest in longer-term capital projects rather than the production of direct consumers goods. Higher-order goods production becomes more profitable, and entrepreneurs accordingly hire resources away from the production of lower-order goods at higher rental rates, beginning an unsustainable boom by decreasing the ratio of consumption to investment goods (the so-called "injection effects" of money creation). Consumers, however, will continue to consume current and future goods in a manner consistent with their actual rate of time preference. Since producers are producing for an apparently lower rate of time preference, consumers will find their preferences cannot be satisfied within the new structure of production. The current consumption plans of consumers are thwarted, bringing about a "forced" saving. So begins the bust which, in the Austrian theory, is the necessary realignment of the inter-temporal consumption and production plans.

Thus, the essence of the Austrian theory of cycles involves a misalignment between the supply of and demand for loanable funds.[6] This misalignment occurs because the shortage of loanable funds does not bring about the appropriate adjustment in the interest rate when a transitory increase in the supply of loanable funds can be manufactured, but instead results in the aforementioned injection effects on intertemporal prices. An analysis of the business cycle implications of alternative monetary regimes from the Austrian perspective must therefore concentrate on eliminating the incentives for increasing bank credit absent a genuine and sustainable change in the conditions of the market for savings.

The foregoing discussion highlights a substantive difference between the two theories regarding the treatment of capital. Austrians stress that capital goods are heterogeneous, and the fact that these goods maintain varying degrees of specificity relative to other resources has important implications for the business cycle.[7] Hence, Austrians focus on the sources of variation among resources in the production process. By contrast, the paramount unit of capital for a monetarist is that of human capital which, it is acknowledged,

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[5]How this shortage develops is of secondary importance, although Austrians emphasize (with good reason) the role of interest rate manipulation by central banks. There is absolutely no assumption of "market failure" in positing an initial shortage of funds as the starting point for an Austrian business cycle episode.

[6]Some Austrians, influenced by Rothbard, find problems with the loan market as an analytical device, but generally acknowledge that the interest rate in this market is nonetheless "derived from" the natural rate.

[7]See Sechrest (1997) and Horwitz (2000) for worthwhile discussions of this topic.

is easily misallocated under bad monetary policy. Because monetarists acknowledge the importance of human capital, say the Austrians, they should also recognize that other forms of capital are worthy of attention. Likewise, Austrian theory can certainly be expanded in ways that focus attention on the market for human capital and the associated fluctuations in labor wage rates that are familiar to the monetarists.[8]

We are not attempting here to produce a synthesis of the quantity-theory and Austrian approaches, although in-roads in that direction have been made recently by Horwitz (1996a), Sechrest (1997), and others. Rather, our aim is to use the aforementioned common ground between the two approaches to analyze the impact of monetary re-organization. Specifically, we would like to draw some very general, though perhaps tentative, conclusions about the prospects for stabilizing business cycles by way of a comprehensive change in the organization of money and credit. In doing so, we acknowledge that there are differences between the various viewpoints that are not addressed in the foregoing analysis. However, we believe these differences to be peripheral to the underlying issue of whether there are enough similarities between them to offer hope for a common solution to their concerns regarding monetary organization.

## A Framework for Analysis of Monetary Business Cycle Theories

In order to generalize the discussion of monetary cycle theories, it is helpful to identify a common analytical framework. We choose the familiar equation of exchange for two reasons. First, it is already widely used and well understood as a framework for the money-to-macro relationship emphasized by monetarist thought. Second, and equally important, its limitations as a theoretical device are also well documented and easy to identify. In other words, the additional assumptions necessary to impart theoretical content to the relationships represented in the equation of exchange are straightforward. Thus, while it may not be a great device for demonstrating the efficacy of a particular monetary theory, it is an excellent one for the comparison of competing monetary theories under a general framework.

Consider a standard formulation of the exchange equation:

$$M = kPY \tag{1}$$

where $M$ is the average level of money supply (for a given time period), $k$ is the inverse income velocity of money, $P$ is the average price level for all marketable goods and services, and $Y$ is the level of aggregate output. Converting to an approximation of the dynamic form of the equation yields[9]

$$m = k' + p + y, \tag{2}$$

[8]See Garrison (2001) for some examples of this sort of analysis.

[9]The fact that this is only a first-order approximation is irrelevant here, because it is the functional relationships, and not the numerical ones, that are important to the following discussion.

where $m$, $k'$, $p$, and $y$ are the (periodic) rates of change in $M$, $k$, $P$, and $Y$, respectively. This equation relates the rate of money supply growth to the rates of change in money (i.e., cash balance) demand, the price level, and real output.

Quantity-theorists such as Milton Friedman have attached the familiar assumptions of stable (or, more correctly, predictable) money demand and short-run stickiness in nominal prices and wages. This leads to the simple growth rule for monetary policy,

$$m = y \tag{3}$$

a corollary of which is stabilization of the average price level. Monetary disequilibrium theorists such as Yeager (1997), looking back to the pre-Keynesian monetarist tradition of Irving Fisher, Herbert Davenport, and Clark Warburton, broaden the scope of Monetarist theory to account for fluctuations in the demand for cash balances, so that the operative monetary policy becomes[10]

$$m = k' + y. \tag{4}$$

Austrians like F.A. Hayek (1975, pp. 199–263) and Murray Rothbard (2000, pp. 59, 169–81) warn, however, that following a policy of price level stabilization may, in some cases, hinder adjustment of relative prices to their market-determined levels and thus do more harm than good. In particular, they point out that some price level deflation can be expected in the context of real output growth deriving from productivity improvements and the like. Horwitz (1996b, p. 317) explains that the assumption of price rigidity in such a case is questionable, because unlike those movements in money demand that "are not the intention of any particular entrepreneur," productivity-induced changes occur "because entrepreneurs intend those results to occur; thus the appropriate price changes are not problematic."[11]

Hayek (1935, p. 27) expressed optimal monetary policy as constancy in the "effective amount of money in circulation" or total money stream, MV, where V is the income velocity of money. Thus, the appropriate policy entails

$$m = k', \tag{5}$$

meaning that potential changes in the average price level resulting from changes in the demand for cash balances will be stabilized, but those resulting from growth in real output will not. Hayek thus effectively combines policy elements of the Austrian and quantity-theory variants; he calls for money growth in the face of increased money demand but not in the context of productivity-induced growth.

Recognition of the "dual" nature of Hayek's theoretical views may help explain a curious reversal of policy emphasis revealed in Hayek (1978). In contrast to his opposition to price level stabilization in earlier writings, *The Denationalisation of Money* contains an acceptance of price level stability as the

[10]In fairness to Friedman, he fully recognizes the possibility of trends in money demand.

[11]Horwitz attributes this point to Selgin (1990).

most practical goal for monetary policy. This reversal can be construed as a shift in emphasis from the Austrian to the quantity-theorist element in his thinking, based on what he saw as the very different circumstances faced in performing monetary policy analysis in the late 1970s as compared to the 1930s. Although White (1999) suggests that Hayek "repudiated" his earlier theories or questioned their validity for explaining many of the events leading up to the Great Depression, he rather seems merely to have acknowledged that the Austrian element did not serve as a useful explanation of the post-war macro phenomena with which economists were then dealing.[12]

Rothbard (2000) represents an alternative version of the Austrian position in that he rejects *any* positive role for using monetary policy to smooth fluctuations in aggregate spending. Rothbard's position, which is also espoused by Salerno (1983), Hoppe (1994), and Reisman (2000), is based on a subtle line of reasoning that involves a different perspective on the intentions of money holders. The quantity-theory view takes a portfolio approach to explaining cash balance demand, treating it as an alternative to the holding of wealth in other (financial or real) assets. In the Rothbardian view, however, cash balances are not primarily a store of wealth—they exist to facilitate the coordination of plans in using a given level of money supply to purchase a vector of goods at their expected prices, and are therefore always an *effect*, rather than a *cause*, of movements in prices and quantities of goods. Thus, cash balance demand can never be said to cause the business cycle, although it can react to aggregate fluctuations in such a way as to necessitate a further decrease in prices to bring the supply of and demand for money into equilibrium (i.e., the so-called "secondary" deflation).[13] Without the worry of a change in cash balances causing a shortage of funds, the important aspect of monetary policy involves limiting the ability of the banking system to *over*-extend credit and thereby begin the business cycle. The optimal monetary policy is, therefore, that which stabilizes the money supply in the short-run, or

$$m = 0. \tag{6}$$

The four views just presented can be conveniently illustrated using a two-by-two matrix that categorizes the aforementioned views according to the (implicit or explicit) assumptions made regarding (1) the stability of money demand and (2) the risk and importance of relative price distortions in consumption and investment resulting from money supply fluctuations.

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[12]Hayek (1979, pp. 4-5) states this clearly. In fact, Hayek's thought seems to have undergone a slow transformation from early agreement with Rothbard's position (see below), to an acknowledgement of the role of money demand for monetary policy, and finally to a grudging acceptance of price level stabilization as a practical goal. Support for the "Hayekian" position presented here can, by the way, be found even among traditional monetarists—for example, Warburton (1946) submits that an exception to the price level stabilization rule might be made in the context of secular output growth (see Horwitz, 1996, p. 297).

[13]See Rothbard (2000), pp. 14-17.

Table 1
Four Rules for Optimal Monetary Policy

| Importance of Injection Effects | Instability of Cash Balance Demand ($k$): Low | Instability of Cash Balance Demand ($k$): High |
|---|---|---|
| Low | $m = y$ (Friedman) | $m = k' + y$ (Fisher) |
| High | $m = 0$ (Rothbard) | $m = k'$ (Hayek) |

The northwest quadrant represents the simple money growth rule frequently attributed to Friedman. This rule rests primarily on the stability of short-run factors that can affect aggregate spending. The northeast quadrant represents the related quantity-theory view in which movements in money demand (for both transactions and portfolio purposes) are accommodated by monetary policy. The southeast quadrant represents Hayek's "combined" view, recently proposed in modified form as the "productivity norm" by Selgin (1990, 1997),[14] in which the ideal monetary policy accommodates changes in cash balance demand. Finally, the alternative Austrian view of Rothbard, in which interest rates (and relative prices) are distorted by transitory movements in money supply and there is no portfolio demand for cash balances, is represented in the southwest quadrant.

## Comparative Implications of Monetary Cycle Theories Under Free Banking

The theoretical viewpoints just described share some very important characteristics in regard to their implications for monetary reform. Each theory relies upon the concept of monetary equilibrium as the basis for non-distorting monetary policy, and explains the business cycle as a deviation from equilibrium in the money market. Furthermore, each theory posits a set of conditions necessary for market equilibrium. We now proceed to analyze whether one could expect these various conditions to be met under a regime of competitive note issue, or free banking. We will not go into the details of the free banking proposal here, but refer the reader to the work of Selgin (1988, 1997) and Selgin and White (1987, 1994). We adopt the view of Selgin that the key characteristics of a free banking system are "the removal of statutory reserve requirements and restrictions on private firms' ability to issue substitutes (paper, plastic, or electronic) for government-issued paper currency" (Selgin

[14]Selgin's formulation differs from Hayek's in that the former appears to propose that changes in money demand resulting from the increased *supply* of factors also be offset by monetary policy.

1997, p. 67). Of less importance for the current study is the particular manner in which the reform takes place; i.e., whether as a result of the gradual, somewhat uneven deregulation of banking that is already taking place globally, or of a more sudden, comprehensive change in national banking systems.

Given the theoretical bases for policy prescriptions informed by Austrian and monetarist assumptions, we return to the objective posed at the beginning of this paper, namely to determine whether (and to what extent) monetary business cycles can be expected under a system of competitive note issue by privately owned banks. We focus on the likelihood that the conditions necessary for the *systematic* distortion of price and/or interest rate signals will manifest themselves. In this section, we approach the problem informally, followed in the next section by a more formal, analytic discussion.

First, under what conditions will the economy experience Austrian-type business cycles? Carilli and Dempster (2001), following Hayek (1966), make the case that an Austrian cycle will occur if and only if two conditions hold: (1) the quantity of money must be sufficiently *elastic*, and (2) banks must be able to *externalize* at least some of the risk associated with monetary expansion. The first of these conditions is fulfilled by the existence of fractional reserves, and the second by virtue of the monopolization of the currency by government authorities. According to this view, systematic distortions in interest rate signals brought about by monetary expansion (an Austrian-type cycle) would not occur in a 100 percent reserve regime, because there would be no way for banks to maintain below-equilibrium interest rates by artificially increasing the supply of loanable funds. Market forces would operate to eliminate any shortage of funds, and the interest rate would thereby increase to bring quantity demanded into equality with quantity supplied. We shall see, however, that one should also not expect Austrian cycles under a regime of competitive note issue *regardless* of whether fractional reserves are allowed or not, as long as the cost of over-extension by an individual bank is borne by that bank in the form of adverse movements in the marginal value of its note issue. Each individual bank, acting as a profit-maximizing firm, is forced to weigh the marginal revenue of extending note issue against the marginal cost of doing so. Given that new note issue will typically take place through credit markets, the marginal revenue will be the interest on the loan, while the marginal cost will include both the default risk of the loans and the liquidity risk (the risk that the bank will be unable to redeem the notes) associated with the issue. The latter, in particular, is a positive function of the quantity of notes issued, and since individual banks will be unable to pass these risks onto other banks in a deregulated system, systematic over-extension by individual banks (and the banking system as a whole) seems unlikely.[15]

[15]We do not deny the possibility of entrepreneurial error under a free banking regime. Divergent expectations will certainly cause some banks to overestimate the proper amount of note issue at times. But we fail to see how such entrepreneurial error can produce the

Because some Austrian thought (influenced by Hayek) also contains a significant "quantity-theory" element, however, we must also examine the likelihood of a monetarist business cycle occurring under the aforementioned regime. The significant factors in the monetarist cycle, again, are the existence of price/wage rigidity and the associated lag between changes in output and input prices. The failure of prices and wages to adjust quickly and mutually to new levels of money demand means that coordination will have to be achieved through a long, slow process involving incremental quantity adjustments. This failure in price/wage adjustment can, in turn, be traced to the lagging of expectations behind the realities implied by new market conditions. Thus, the appropriate policy for monetarist cycles revolves around the conditions under which expectations concerning prices and wages will be systematically distorted.

In keeping with our emphasis on business cycles as systematic fluctuations brought on by monetary shocks, we conclude that it is unlikely that monetarist-type business cycles will occur under a regime of competitive note issue. We reach this conclusion because the same forces that counteract the systematic over-extension of credit that creates the boom in the Austrian cycle will counteract the systematic under-extension that creates the downturn in the monetarist cycle. Under a regime of competitive note issue, individual banks have an incentive to increase the supply of funds in the face of any shortage, and they will bear the full costs (in terms of lost profits) of failing to do so. Furthermore, the question of price/wage rigidity becomes essentially unimportant as a practical matter, because the profit incentive will encourage banks to always supply funds up to the equilibrium quantity at *any* prevailing price level. Thus, in every case where price level rigidity causes a shortage of funds, incentives will lead to the dissipation of that shortage, but in cases where prices and wages adjust quickly, the shortage will be eliminated by the mutual adjustment of quantity supplied and quantity demanded in the market for money.

## Money Supply Adjustments: A Formal Analysis

We now focus more specifically on the Austrian theories of Rothbard and Hayek in a formal analysis of business cycles under free banking. To ascertain whether the banking system as a whole will adjust the money supply appropriately under the various theoretical conditions posed, we must first come to an understanding of how an individual bank can be expected to adjust its lending policies in response to those conditions. Consider first the bank's lending decision before any changes occur. Assuming (as its proponents do) that a deregulated, free banking regime results in a "competitive" industry structure, the marginal benefits (revenues) of lending will converge toward the rate of interest determined by the supply of and demand for loanable funds.

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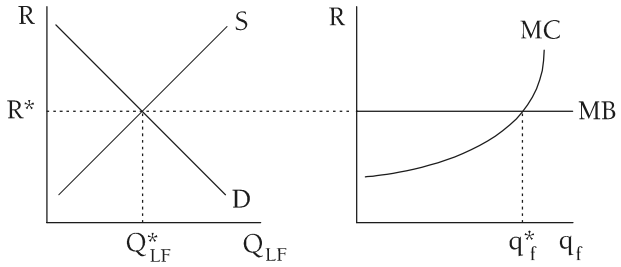
"cluster of errors" that characterizes a general downturn. It is not divergent expectations that produce such errors, but expectations that are simultaneously common and erroneous.

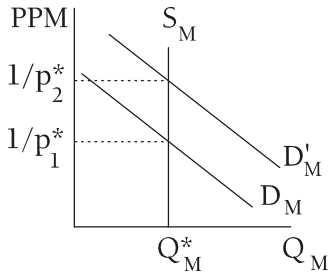
The marginal cost of lending, apart from administrative expenses and the like, will be a positive function of the quantity of funds loaned by the bank because of the increase in liquidity risk associated with higher levels of lending. A profit-maximizing bank will, therefore, lend to the point where MR=MC[16] (at $q^*_F$ dollars loaned; see Figure 1).

Figure 1
*The Individual Bank's Lending Decision in Competitive Equilibrium*




Now, suppose that an external shock causes the demand for money to increase. According to the "pure" Austrian (i.e., Rothbardian) view, this increase is a reflection of the newly amended plans of market participants and, therefore, fully anticipated in regard to its deflationary effects. Thus, there is no need for a monetary response, because the purchasing power of money will adjust quickly to bring supply and demand into equilibrium again (see Figure 2).

Figure 2
*Adjustment of the Price Level in Response to a Change in Money Demand*




As Rothbard demonstrates in *Man, Economy, and State*, "there is no reason why a change in the demand for money should affect the interest rate one iota" in this circumstance (Rothbard 1993, p. 678). Because the purchasing power of money is the inverse of the average price level, the adjustment corresponds to a decrease in prices and wages. This deflationary response to increased

[16]See White (1984), pp. 301-02.

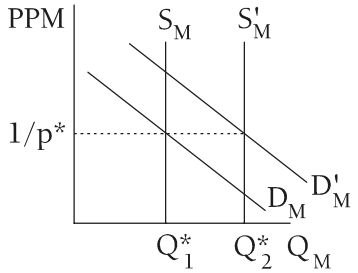
money demand is, indeed, the intended effect of market participants' desires to economize on their use of money.

Rothbardians often worry that the tendencies of financial institutions under free banking would be toward an expansion of money supply in this circumstance, but an examination of the microeconomics of banking does not support this view. The initial increase in money demand would cause upward pressure on the interest rate because it represents less (more) willingness to save (borrow) on the part of suppliers (demanders) of funds. This would eventually be offset, however, by an increased (decreased) willingness to save (borrow) due to the diminished inflationary expectations brought about by price deflation. Thus, from the perspective of the competitive, profit-maximizing bank, nothing essential has changed about the long-run relationship of revenues to costs. Entrepreneurial error may still exist, but there is no tendency toward systematic over-expansion.

One might propose in answer to this simple analysis that, although any single bank would suffer a clearinghouse deficit by expanding note issue in this circumstance, the banking system as a whole could conceivably expand at a uniform rate, preventing the clearinghouse mechanism from imposing the appropriate discipline upon individual banks. Such a story, however, is implausible given the lack of clear incentives for it to occur. Recall that in the case of a monopoly currency, banks have the incentive to engage in this sort of tacit collusion because they can externalize risk upon other parties. The opportunity to externalize risk is lacking, however, in the free banking case, because it is specific to the note issue of individual banks. Thus, to posit tacit collusion under free banking involves a violation of the assumption of methodological individualism that is generally a hallmark of Austrian theorizing.

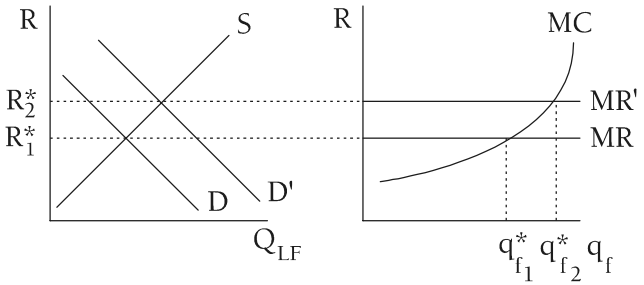
Now consider the case where inflexibility in prices and wages prevents the smooth adjustment of the price level back to equilibrium. According to the monetarist view, a monetary response is necessary to prevent the slow and uneven adjustment of the price level from miring the economy in a long slump. The ideal monetary response would be just enough of an increase in money supply to stabilize the price level (see Figure 3).

Figure 3
*Ideal Monetary Response to an Increase in Money Demand with an Inflexible Price Level*



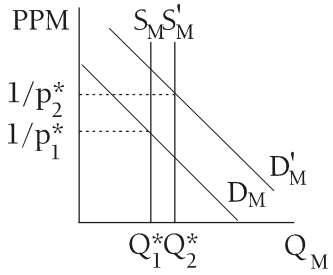
Would a system based on free banking exhibit a tendency toward such a response? An analysis of the microeconomics of banking suggests that it will. The increase in money demand will manifest itself in an increase in the demand for loanable funds as in the previous case. However, this will *not* be followed by any offsetting decrease in the same, because the adjustment of inflationary expectations will be lacking. Therefore, upward pressure on the market interest rate will mean an increase in the marginal benefits of lending by reducing reserve ratios, causing banks to expand their loan portfolios, and thereby increasing the money supply (see Figure 4). Only the quantity of funds supplied will eventually rebound to the extent of the endogenously-generated money supply increase, resulting in a new equilibrium at a higher level of funds.

Figure 4
*Effect of an Increase in Money Demand on the Marginal Benefits of Lending*




In light of this result, consider Hayek's intermediate position that suggests a monetarist story for cash balance demand changes but an Austrian (Rothbardian) one for output-related changes in money demand, including those associated with increased productivity. Having established that a free banking system will exhibit the appropriate tendencies regardless of the theory governing price and quantity adjustments, we can also conclude that the system will appropriately discriminate between different causes of increased money demand that have correspondingly different theoretical implications. Note that it is not necessary that banks *know* the underlying cause of a shortage of money, only how it affects their marginal revenues of lending relative to their costs. Shortages that are quickly eliminated by a falling price level provide no scope for expansion of loan portfolios, while those that are not so quickly eliminated do. Furthermore, it is certainly possible that equilibrium will be restored in any case by a *combination* of the adjustment mechanisms, owing to the fact that price level adjustment is never instantaneous (see Figure 5). A plausible real world view is that the process of price level (Austrian) and money supply (Monetarist) adjustment will occur, in most instances, simultaneously toward a new price-quantity equilibrium in the market for money.

Figure 5
*Simultaneous Adjustment of Prices and Money Supply in Response to an Increase in Money Demand*




## Conclusion

Both Austrians and traditional (quantity-theory) monetarists argue that "money matters" for macroeconomic stability. Although they may disagree upon whether the business cycle results from the systematic over-expansion or under-expansion of credit, they agree that the mismanagement of the supply of money will yield undesirable effects on macroeconomy. And, it appears they can find some common ground in light of their business cycle theories when it comes to competitive note issue. We thus reject the idea that differences in these perspectives prevent the possibility of a mutually acceptable solution to the business cycle problem. For both of these traditions of monetary theory, competitive note issue seems to be a good fit from a business cycle theoretic standpoint, and in accord with their predilection for laissez-faire policy prescriptions.

We have examined the prospects of business cycle stabilization from the perspectives of a "pure" Austrian view (represented by Rothbard), a quantity-theory (monetarist) view, and an intermediate view (represented by Hayek) which contains elements of both traditions. In each case, we have analyzed the microeconomics of the bank lending decision and found the analysis illustrating the appropriate policy response without directed action from outside the lending market. In other words, we find free banking to be a viable monetary reform with regard to business cycle stabilization regardless of the particular theoretical basis from which it is analyzed, at least for theories that ascribe the cause of business cycles to essentially monetary factors.

## References

Bernholz, Peter. 1986. "The Implementation and Maintenance of a Monetary Constitution." *Cato Journal* 6 (3): 477–511.

Carilli, Anthony M., and Gregory M. Dempster. 2001. "Expectations in Austrian Business Cycle Theory: An Application of the Prisoner's Dilemma." *Review of Austrian Economics* 14 (4): 319–30.

Friedman, Milton. 1993. "The 'Plucking Model' of Business Cycle Fluctuations Revisited." *Economic Inquiry* 31 (2): 171–77.

——. 1987. "Monetary Policy: Tactics versus Strategy." In *The Search for Stable Money: Essays on Monetary Reform*. James A. Dorn and Anna J. Schwartz, eds. Chicago: University of Chicago Press.

——. 1969. "Monetary Studies of the National Bureau." In Friedman, *The Optimum Quantity of Money and Other Essays*. Chicago: Aldine. Pp. 261–84.

Garrison, Roger. 2001. *Time and Money: The Macroeconomics of Capital Structure*. London: Routledge.

——. 1996. "Friedman's Plucking Model: Comment." *Economic Inquiry* 34 (4): 799–802.

Hayek, Friedrich A. 1979. "Toward a Free-Market Monetary System." *Journal of Libertarian Studies* 3 (1): 1–8.

——. 1978. *The Denationalisation of Money*. London: Institute for Economic Affairs.

——. [1939] 1975. *Profits, Interest and Investment*. Clifton, N.J.: Augustus M. Kelley.

——. [1933] 1966. *Monetary Theory and the Trade Cycle*. New York: Augustus M. Kelley.

——. 1935. *Prices and Production*. 2nd ed. New York: Augustus M. Kelley.

——. 1928. "Intertemporal Price Equilibrium and Movements in the Value of Money." Reprinted in *Money and Fluctuations: Early Essays*. Roy McCloughry, ed. Chicago: University of Chicago Press, 1984.

Hoppe, Hans-Hermann. 1994. "How is Fiat Money Possible? or, The Devolution of Money and Credit." *Review of Austrian Economics* 7 (2): 49–74.

Horwitz, Steven. 2000. *Microfoundations and Macroeconomics: An Austrian Perspective*. New York: Routledge.

——. 1996a. "Capital Theory, Inflation and Deflation: The Austrians and Monetary Disequilibrium Theory Compared." *Journal of the History of Economic Thought* 18: 287–308.

——. 1996b. "Reply to Cottrell." *Journal of the History of Economic Thought* 18: 314–18.

Mankiw, Gregory N., and David Romer, eds. 1991. *New Keynesian Economics*. Cambridge, Mass.: MIT Press.

Paul, Ron. 1992. "The Political and Economic Agenda for a Real Gold Standard." In *The Gold Standard: Perspectives in the Austrian School*. Llewellyn H. Rockwell, Jr., ed. Auburn, Ala.: Ludwig von Mises Institute.

Reisman, George. 2000. "The Goal of Monetary Reform." *Quarterly Journal of Austrian Economics* 3 (3): 3–18.

Rothbard, Murray N. [1963] 2000. *America's Great Depression*. 5th ed. Auburn, Ala.: Ludwig von Mises Institute.

——. [1962] 1993. *Man, Economy, and State: A Treatise on Economic Principles*. Auburn, Ala.: Ludwig von Mises Institue.

——. [1962] 1991. *The Case for a 100 Percent Gold Dollar*. Auburn, Ala.: Ludwig von Mises Institute.

Salerno, Joseph T. 1983. "Gold Standards: True and False." *Cato Journal* 3 (1): 239–67.

Sechrest, Larry J. 1997. "Austrian and Monetarist Business Cycle Theories: Substitutes or Complements?" In *Advances in Austrian Economics*, vol. 4. Peter J. Boettke and Steven Horwitz, eds. Stanford, Conn.: JAI Press.

Selgin, George A. 1997. *Less than Zero: The Case for a Falling Price Level in a Growing Economy*. Hobart Paper 132. London: Institute for Economic Affairs.

——. 1990. "Monetary Equilibrium and the Productivity Norm of Price-Level Policy." *Cato Journal* 10 (1): 265–87.

——. 1988. *The Theory of Free Banking: Money Supply Under Competitive Note Issue*. Totowa, N.J.: Rowman and Littlefield.

Selgin, George A., and Lawrence H. White. 1994. "How Would the Invisible Hand Handle Money?" *Journal of Economic Literature* 32 (4): 1718–49.

——. 1987. "The Evolution of a Free Banking System." *Economic Inquiry* 25 (July): 439–57.

Skousen, Mark. 1988. *Economics of a Pure Gold Standard*. Auburn, Ala.: Ludwig von Mises Institute.

Warburton, Clark. [1946] 1951. "The Misplaced Emphasis in Contemporary Business Fluctuation Theory." Reprinted in *AEA Readings in Monetary Theory*. New York: Blakiston.

White, Lawrence H. 1999. "Hayek's Monetary Theory and Policy: A Critical Reconstruction." *Journal of Money Credit and Banking* 31 (1): 109–18.

——. 1984. "Free Banking as an Alternative Monetary System." In *Money in Crisis: The Federal Reserve, the Economy, and Monetary Reform*. Barry N. Siegel, ed. San Francisco: Pacific Institute.

——. 1983. "Competitive Money, Inside and Out." *Cato Journal* 3 (1): 281–99.

Yeager, Leland. 1997. *The Fluttering Veil: Essays on Monetary Disequilibrium*. George Selgin, ed. Indianapolis, Ind.: Liberty Fund.

——. 1986. "The Significance of Monetary Disequilibrium." *Cato Journal* 6 (2): 369–99.

——. 1983. "Stable Money and Free-Market Currencies." *Cato Journal* 3 (1): 305–26.