Financial Structure and Monetary Rules*

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I. Monetary Policy and the Conversion of Shocks into Macroeconomic Outcomes

Rules governing the monetary policies of central banks determine the response of the economy to various macro-economic shocks. The shocks are of several kinds. Three of the most important are the following: Real demand shocks affect the aggregate demand for goods and services. They may arise from the spending behavior of consumers, from business investment, from exports, and from government fiscal operations. Financial shocks affect the demand for monetary assets relative to their close portfolio substitutes, whether by banks or by other private agents. Price shocks affect current and expected prices of goods and services; they may arise in world commodity markets, in exchange rates, or in domestic wage and price settings by trade unions and businesses. Monetary policies may be invariant to these shocks, at least for a time, because they cannot be discerned or anticipated or because on principle the authorities choose to ignore them. In any case the monetary rule distributes the shocks among several macroeconomic variables, of which the most important are real aggregate output, real interest rates, and prices. Different monetary rules distribute the various shocks differently. One important consideration, in choosing among competing rules, is evaluation of their conversions of shocks into the macroeconomic variables of social concern.

This mode of analysis has been well known at least since *William Poole's* celebrated article in 1970. *Poole,* using the standard *IS-LM* framework, compared a monetary policy fixing the interest rate (both real and nominal, as he abstracted from price and inflation effects) with one fixing the quantity of money. He assumed that the central bank could, if desired, respond

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quickly to observed interest rates but that output was not observed soon enough to be included in a monetary rule. He showed that pegging the interest rate protected the economy from output variation due to purely financial shocks but transmitted real demand shocks into output fluctuations. A monetarist rule, on the other hand, would convert both types of shocks partly into output changes and partly into interest rate changes. Output would be less vulnerable to real demand shocks and more vulnerable to financial shocks than under the interest rate rule.

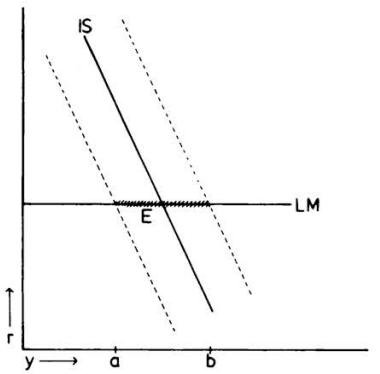
These conclusions were based on the standard assumption that the *Hicksian LM* curve, taking account of the monetary rule, would be horizontal in conventional output/interest rate space under the interest-pegging policy and upward sloping under the monetarist rule. A vertical *LM* "curve" would protect the economy completely from output fluctuation due to demand shocks, converting them entirely into interest rate volatility, while rendering output highly vulnerable to financial shocks. But a fixed-*M* policy would not insure a vertical *LM* curve unless the demand for that *M* were wholly interest-inelastic. Otherwise, to achieve a vertical *LM* curve and the shock distribution it would imply, would require a super-monetarist policy, namely one that changed the quantity of money systematically in the opposite direction from observed interest rates.

Figures 1, 2, and 3 picture graphically the three situations: pegged interest rate and horizontal *LM* curve; monetarist rule with upward sloping *LM* curve due to response of velocity or central bank or both to interest rates; vertical *LM* curve due either to inelasticity of velocity or to super-monetarist policy. In each case the expected outcome is point *E* and the shaded zones encompass outcomes with some $x\%$ probability given the joint distribution of real demand shocks displacing *IS* and financial shocks displacing *LM*, assumed uncorrelated in the illustration. The shapes of the zones, differing from diagram to diagram, show how the different *LM* shapes distribute the shocks differently as between output and interest rate deviations from *E*. In the extreme case of zero real demand shocks, outcomes are always on the central *IS* curve, solid in the diagrams; in the other extreme case, zero financial shocks, outcomes are always on the solid *LM* curve.

If a classical situation, with supply-determined output and flexible prices, is assumed instead of the *Keynes*ian situation of the *Poole* article and of Figures 1 - 3, the *Poole* analysis is still applicable. Just reinterpret the horizontal axis in the *IS-LM* diagram to refer to price level rather than to real output. Because of the *Pigou-Patinkin* real balance effect, the *IS* curve will still be downward sloping.

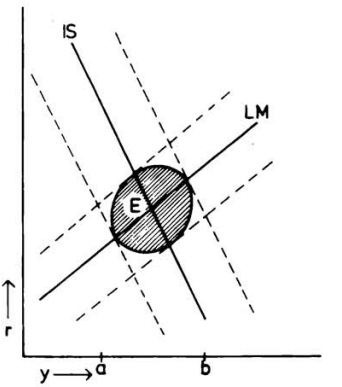
Output and Interest Variability under Demand and Financial Shocks: Three Cases

Figure 1



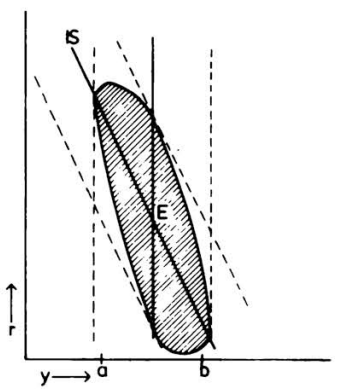
1. Pegged Interest Rate

Figure 2



2. "Leaning against the Wind"

Figure 3



3. Super-monetarist

Note: The interval *ab* in all three diagrams in the horizontal range of variation of the *IS* curve around *E*, to a given probability.

One monetarist proposition asserts the stability of money demand, the unimportance of financial shocks relative to real demand shocks. This argues for a monetarist policy rule, as against a pegged interest rate, in the pursuit of output stability – and of price stability insofar as variations of real demand are absorbed in prices rather than quantities. But the logic of this monetarist argument would seem to call for a vertical *LM* curve, as in Figure 3. If nature does not provide one, then a super-monetarist policy would be in order. Nature would provide one according to the old-fashioned quantity theory of money, which denied or ignored the interest-elasticity of

money demand. I have the impression that this view has been abandoned under the weight of theoretical logic and empirical findings.

In general, the optimal shape of the *LM* curve depends on the joint distribution of *LM* and *IS* shocks, e.g. on their variances and covariance. This is true even if the objective is simply to minimize the variance of output (or price or some combination of the two) regardless of the variance of interest rates. There is no justification at all for assuming that the optimal *LM* shape is the one that corresponds to a fixed money supply. The optimal money supply rule could be either less accommodative than that, "super-monetarist," or more accommodative; by "accommodative" I mean in this context positively responsive to interest rates.

II. How the *LM* Curve Distributes Demand, Financial, and Price Shocks

The *Poole* analysis can be extended to take explicit account of supply price shocks along with the other two types. Here is a simple short-run model, from which may be derived the effects of each of the three kinds of shocks and the way in which these effects are altered by changing the slope of the *LM* curve.

(1) $$Y - E(y, r, p) - u_1 = 0 \quad \text{Goods and services} \quad (IS)$$

(2) $$r - lY + (l/k)\,(m - u_2)/P = 0 \quad \text{Money} \quad (LM)$$

(3) $$p - S(Y) - u_3 = 0 \quad \text{Price level}$$

The symbols are the following: Y real output; r real interest rate; p price level; u_1 real demand shock; u_2 shock to excess demand for nominal money; u_3 shock to supply price of output; l slope of *LM* curve, account taken both of private agent money demand response to interest rate and of the central bank's supply response; k income effect on money demand; m constant in money supply function.

The following are standard assumptions regarding:

the derivatives of the aggregate demand function E with respect to its arguments: $0 < E_Y < 1$; $E_r < 0$; $E_p \leq 0$ (the *Pigou-Patinkin* real balance effect);

the derivative of the aggregate supply function S : $S_Y > 0$;

the parameters of the *LM* relation: $l > 0$; $k > 0$; $m > 0$.

This is a *Keynes*ian model, as equation (3) indicates. It is not possible to discuss nominal supply price shocks in a classical model where price is completely flexible and wholly endogenous. I spare you the standard comparative statics calculations which support the qualitative results summarized in Tables 1 and 2[1]. These confirm those of the *Poole* analysis already discussed for the first two kinds of shocks. As one would intuitively expect, a positive price shock lowers real output and raises the price level. Steepening "*LM*" accentuates the output effect and mitigates the price effect. For those who are concerned more for price stability than output stability, this is a reason for preferring a more monetarist structure.

Table 1
Effects of Shocks on Macroeconomic Outcomes

	Variable		
Shock:	Real Output	Real Interest Rate	Price Level
Excess Real Demand	+	+	+
Excess Money Demand	−	+	−
Increase in Supply Price	−	−	+

[1] A further assumption, beyond the standard restrictions listed in the text, is required for the entries for Y and p in the third row of Table 2. It is that the *Pigou-Patinkin* effect E_p is relatively weak. To understand it, imagine that (1) and (2) are solved to eliminate r and to derive an aggregate demand relation of p to Y, which will be negatively sloped. This, together with equation (3), the positively sloped aggregate supply relation of p to Y, determines p and Y. As in ordinary demand/supply analysis, an upward shift of the supply curve will lower Y and raise p. It will lower Y more and raise p less the gentler the slope of the demand curve. The question in Table 2 is how steepening *LM* alters the slope of the aggregate demand relation of p to Y. Two price effects on aggregate demand are present in the model. One is the *Pigou-Patinkin* effect: a price increase lowers real financial wealth and increases saving. This effect is smaller when *LM* is steeper, because it is offset to a greater degree by a decline in the interest rate. The other is the indirect monetary effect: a price increase lowers the real money supply and raises interest rates. Making *LM* steeper accentuates this effect. The first effect tends to make aggregate demand less sensitive to the price level, the second effect to make it more sensitive. The assumption of Table 2 is that the monetary effect dominates, so that the aggregate demand relation of p to Y becomes flatter. Technically, it is that $(m - u_2)/p$, the absolute value of the real money supply change due to a price movement, exceeds $-E_p/(1 - E_Y)$, the "multiplied" *Pigou-Patinkin* effect.

Table 2
Effects of Steepening *LM* Curve on Strength of Shock Effects
(+ means absolute size if effect is increased)

	Variable		
Shock:	Real Output	Real Interest Rate	Price Level
Excess Real Demand	−	+	−
Excess Money Demand	+	+	+
Increase in Supply Price	+	+	−

An external price shock, dramatically typified by the two OPEC crises of the 1970s, combines a positive supply price shock and a negative real demand shock. If the *LM* curve is close to vertical, there will be a much larger output loss but less of a general price increase than if monetary policy is more accommodative.

The price shock in the preceding analysis is an increase in price level, present and future, leaving expected inflation unchanged. An increase in the expected inflation rate is a shock of a different kind. It is indeed equivalent to a reduction in demand for money at a given real interest rate. The nominal interest rate rises relative to the real rate. But the result is that the real rate falls, as Table 1 says. The analysis indicates that inflationary expectations are expansionary. If this seems strange in these times, it is because the analysis assumes a fixed monetary rule while experience has led people to expect that monetary policy itself will become more restrictive on news of higher inflation. In the model, a positive expected inflation shock would be correlated with a positive shock to excess money demand, delivered by the central bank.

III. Reforms of Financial Structure and their Macroeconomic Implications

The above review was intended to prepare the ground for the main point of the paper. Once policy is defined by a rule, it essentially modifies the structure of the system. Policy and structure become inextricably combined. Their joint product is what matters, as illustrated by the shape of the *LM* curve in the example above. One way to alter the operating properties of the system, specifically the way shocks are distributed among various outcomes, is to change the policy rule. Another way is to change the structure.

Moreover, if structural reform occurs, whether for reasons connected with macroeconomic policy and performance or not, then most likely the policy rule should be changed too. That is, the rule that was optimal given the old structure will generally be no longer optimal under the new. For example, suppose that changes in financial technology, institutions, and regulations twist the *LM* curve of Figure 2 toward the vertical one of Figure 3. Then if a monetarist rule was previously optimal, a more accommodative rule would now be optimal, with policy offsetting the non-accommodative consequences of those structural changes.

The example is, it happens, realistic. Structural changes of the kind described are now occurring rapidly in the United States, and they are indeed the topical motivation of this paper. Financial deregulation is making the *LM* curve vertical. Quantity theorists were wrong in the past in arguing as if it already was, as if money demand were interest-inelastic. But now monetarists are in the front line of advocates of reforms of financial structure that will make the world over to their design. Let me explain in some detail.

The most important reform is that legal ceilings on interest rates on bank deposits are being removed. In only a few years even demand deposits will bear market-determined rates. Deregulation conforms to the spirit of the times. Economists instinctively support free price competition among banks as among airlines or trucks or dairy farmers. Monetarists are especially strong in free market instincts, but they have macroeconomic objectives as well. They wish to tighten the central bank's control of money supply, and to hold GNP more tightly to the money supply in the face of shocks to aggregate demand.

For these reasons, their agenda for "reform" include the introduction of flexibility in other interest rates too. They would have the Federal Reserve pay interest on banks' reserve balances, presumably at a rate indexed to market rates. They would index the Federal Reserve discount rate, making it equal a market rate plus a constant penalty. Along with contemporaneous reserve accounting, already in the process of adoption by the Federal Reserve, these reforms are designed to tighten the relation between the supply of unborrowed reserves and the deposit component of *M-1*. In this monetarist vision, there will also be uniform reserve requirements on *M-1* deposits, which are transactions media, and none on other liabilities, which are not.

The pace of deregulation has recently accelerated. Banks and other depository institutions will, beginning this very month December 1982, be allowed to offer deposits payable on demand, with interest rates uncontrol-

led. Subject to a minimum balance requirement, $2500, unlimited withdrawals on demand will be permitted, and these will include three automatic and convenient transfers to the depositor's other accounts in the same bank. Since the number of withdrawals by check will be limited to three per month, these deposits are not quite transactions media on the Fed's current *M-1* criterion, "checkable". Congress in 1982 rushed through the legislation authorizing these new deposits in order to enable banks and other regulated depository institutions to compete with money market mutual funds. The new deposits will be free of reserve requirements and will be insured by the federal government, an advantage over the funds.

More recently an even more decisive step was taken on the road to deregulation of deposit interest rates. Beginning in January 1982, banks and other depository institutions will be authorized to offer insured demand deposits with unlimited checking and pre-arranged transfer privileges. The only legal restrictions are a minimum balance requirement of $2500 and the ineligibility of businesses to hold accounts of this type. These deposits are called "super-NOW" accounts. Regular "NOW" accounts have been available nationwide for non-business depositors, since January 1, 1981. They originated as interest-bearing savings deposits on which checks could be written provided they were called by another name, Notices Of Withdrawal. Like regular NOW accounts, super-NOW deposits are subject to reserve requirements and will be counted in *M-1*.

As deposits come to bear competitive interest rates monetary theory – models of money supply and demand and of the transmission of control measures and shocks through financial markets to the real economy – will have to be rewritten. Standard theory assumes that "money", whatever its other characteristics, bears an exogenously fixed nominal interest rate, set by law, regulation, or institutional convention. It may be zero, as it is on currency and has been on reserve balances and conventional demand deposits. It may be an effective ceiling above zero, as on passbook savings, on most time deposits, and in the United States on regular NOW accounts. Demand for monetary assets of these kinds is specified in our models to depend on the endogenous market-determined interest rates on substitute non-money assets and on other variables. The differential between those uncontrolled interest rates and the fixed nominal rates on monetary assets is compensated by the non-pecuniary services of money, which are thought to be inversely related to the real quantity held.

Consider how this traditional property differentiates "money" from assets with uncontrolled endogenous interest rates. When, for example, the supply of treasury bills is increased, one adjustment that can induce people to buy

and hold the new supply is the fall in the price of bills, the increase in their interest yield. This is not the only adjustment, but it is the obvious first-order vehicle of equilibration. For fixed-interest money, however, this first-order effect does not occur. If the supply of money is increased, the public has to be persuaded to hold it by changes other than in its own interest rate – notably other interest rates, transactions volumes, prices. Indeed in standard theory this is precisely the reason why monetary control powerfully affects nonfinancial variables. When market rates are paid on money too, the transmission mechanism will be significantly altered.

Currency, it is true, will continue to bear zero nominal interest. In the United States currency outside banks amounts to about one third of *M-1*. One can imagine institutional arrangements for non-zero interest on currency – for example, letting holders annually exchange old bills for new ones plus some interest in coins. Maybe monetarists will propose this next! (Recall that *Keynes* discussed with some admiration *Silvio Gesell*'s "crank" scheme to make interest on currency negative; the holder would have to buy and affix a stamp periodically to maintain the face value of bills.) Assuming that no arrangements of this kind will in fact be made, there will continue to be fixed-interest-money. But our central bank does not control its supply, and cannot as long as the public is free to exchange currency for deposits and vice versa, and banks are free to make exchanges between currency and reserve balances held as deposits in Federal Reserve Banks.

The currency exception is probably not very important. Currency demand does not appear to be sensitive to interest rates when they are already very high. Moreover, interest-induced substitutions for or against currency are likely to be almost wholly with transactions deposits. Consequently when deposits come to bear market- determined rates it will not be a bad approximation in modeling money demand decisions to regard those rates as applying to the whole transactions money supply. Likewise when and if interest comes to be paid on reserve balances at the Federal Reserve, it will not be inaccurate to model bank demands for reserves inclusive of their currency holdings as dependent on that interest rate. In both cases, marginal adjustments will be made in interest-bearing form.

In the old regime, and in the standard model, the "market" for fixed-interest deposits is in disequilibrium. Depositors' demand is smaller than the amounts banks, individually and in aggregate, would like to supply at the controlled rates. Banks will gladly accept, on prevailing terms, any new funds the public would like to deposit; no one will be turned away. When rates are uncontrolled and competitively determined, they will clear the market. Banks will be supplying all the deposits they wish to offer. They will

accept deposits to the point where their marginal cost, including interest, equals the marginal revenue expected from lending or investing the funds. Of course deposit interest rates will be, like loan rates now, administered prices. But, also like loan rates now and uncontrolled rates on certificates of deposit as well, they and the other terms of deposit agreements will be readily changed under competition. The United States system of banks and other financial institutions is, unlike the system in most other countries, decentralized and competitive, though monopolistically competitive.

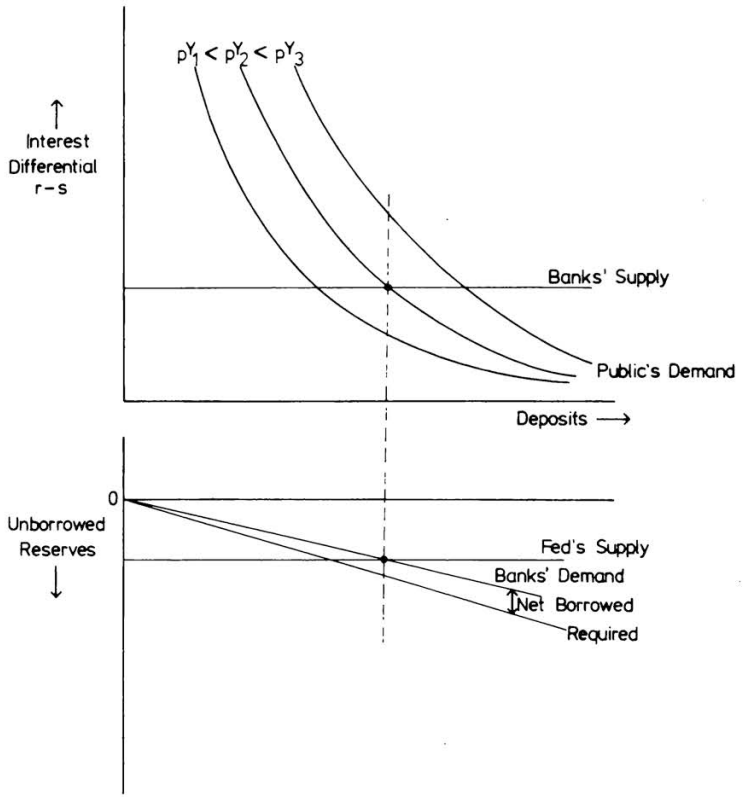
In the new regime, the interest differential between bank assets and deposit liabilities would meet the costs of intermediation. These costs include the risk that deposit withdrawals and the accompanying reserve losses would impose extra costs, borrowing at a premium in the market or at the Federal Reserve discount window. A bank's choice of asset composition, as between illiquid loans and variable-price securities on the one hand, and excess reserves or other liquid assets on the other, would reflect that same risk.

The marginal costs of intermediation are probably fairly constant over normal ranges of variation in the volume of bank deposits and assets. Thus the competitive deposit rate will be below the rates on bank loans and other assets by a fairly constant differential. The public's demand for deposits, on the other hand, depends principally on the interest differential and on transactions volume. If the differential becomes a constant, the demand for deposits will be independent of the level of interest rates. A rise in market interest rates will not reduce the demand for deposits as it does in the old regime and in the standard model, because the rate paid on deposits will rise too. The old monetarist assumption of interest-inelastic money demand will apply, though for a reason quite different from its original motivation.

Figure 4 pictures the new regime. It shows a family of deposit demand curves, for various transactions volumes proxied by money income Yp. The higher curves correspond to higher income levels. As indicated, deposit demand depends inversely on the interest differential. But given constant costs of intermediation, the bank's supply of deposits is perfectly elastic at the interest differential that meets those costs. Thus the equilibrium volume of deposits depends solely on the income level.

Equilibrium also requires demand = supply balance in reserves, shown in the bottom panel of Figure 4. The supply of unborrowed reserves is determined by the central bank by its open market operations. (Actually these operations affect directly the unborrowed monetary base, only part of which takes the form of reserves. The remainder is currency outside banks. The Federal Reserve has to estimate, with some error, the public demand for cur-

Figure 4



rency.) The demand for unborrowed reserves has two components. Required reserves, as indicated in the diagram, are approximately proportional to deposits. From this demand must be subtracted net borrowed reserves, borrowings from the Federal Reserve less reserves held in excess of requirements. At present net borrowed reserves vary directly, in the short run at least, with market interest rates. The discount rate charged by the Federal Reserve is constant, so that an increase in the market rates that can be earned on bank assets is an incentive to borrow and to economize holdings of excess reserves. Once interest geared to market rates is paid on reserves and interest charged on borrowing from the central bank is similarly indexed, this relationship will be nullified. Banks' net borrowed reserves will be essentially a constant fraction of deposits and required reserves, as pictured in Figure 4.

As a result, the central bank will control pretty tightly the volume of deposits by fixing the supply of unborrowed reserves. And thus the central

bank will also determine quite closely the level of money income (pY_2 in the upper panel). These linkages will, moreover, not be loosened by variation of interest rate levels, as they are today. An interesting sidelight, pointed out by *Michael Hadjimichalikakis* (1982), is that innovations in financial technology which either raise transactions requirements for holding money or reduce costs of intermediation will reduce money income unless the central bank responds by increasing the supply of reserves.

The main outcome, as foreshadowed in my first section, is to fulfill the monetarist dream of a vertical *LM* curve.

Of course in the very short run the control of deposits and money supply via fixing unborrowed reserves will not be as tight as the Figure and accompanying text depict. As now, it will take action by the Federal Reserve, adjustment of reserve supply targets, to correct observed deviations from the desired track of monetary aggregates. But the corrections will be faster and the deviations smaller, because some of the adjustments that now require central bank action will occur automatically.

To appreciate the change, it is necessary to understand how the Federal Reserve operates in the present regime. The basic targets are, or at least were until recently, announced growth tracks of monetary aggregates, *M-1* in particular. Primary importance has been attached to meeting numerical targets announced in advance for money growth from the final quarter of one year to the final quarter of the next year. Interim targets for each quarter are also announced in the course of a year. These long and short range *M*-targets should be distinguished from the one-month operating instructions to the New York Federal Reserve Bank regarding open market operations. Since the celebrated announcement of October 1979, these instructions have been designed to obtain a supply of unborrowed reserves consistent with the short-run *M*-targets. Suppose however that bank loans and deposits, and thus required reserves, rise beyond expectation. Money market interest rates will rise as banks scramble to meet their reserve tests. Banks will borrow more from their Federal Reserve Banks at the fixed discount rate and cut down their holdings of interest-free excess reserves. Monetary aggregates will rise above their desired tracks. Correction will come later, by downward adjustment of next month's reserve supply and possibly by upward adjustment of the discount rate.

In the new regime, if and when it is fully established in future, the adjustment will occur sooner by automatic increase in the discount rate. The same assumed shock will raise interest rates more and money supplies less than in the old regime.

This is one buffer or safety valve that the proposed structural reforms remove. The other one, more consequential in the longer run, is the increase in monetary velocity now induced by the rise in interest rates. This will be nullified as the rise in rates extends to money itself. There is no doubt some elasticity in the transactions velocity of money even at constant interest differentials. That is, households and businesses can find ways of handling increased economic activity with the same cash holdings, at least in the short run. As *Akerlof* and *Milbourne* (1979) have shown, depositors who follow an *S-s* strategy for their inventories of cash will handle larger transactions volumes with the same average cash holdings as long as they keep those *S-s* thresholds unchanged. They may change the thresholds when and only when they regard a new volume of transactions as permanent.

In the end the removal of these buffers will make the *LM* curve more nearly vertical in the short run and the longer run, given the same operating and targeting procedures by the central bank.

IV. Dangers of Combining Monetarist Structure and Monetarist Policy

Monetarism has already steepened the *LM* curve considerably. Intermediate-run targets for monetary aggregates made money supply less responsive to demand than pegged interest rates in the forties or the "bill rate only" policies of the early 1960s or the "leaning against the wind" approach of other post-war years. The October 1979 change in operating procedures further removed the short-run accomodative buffers implicit in the previous practice of instructing the open market desk to hold the market interest on overnight interbank loans of reserves, "federal funds", within a narrow range decided monthly by Federal Reserve authorities. The new procedures substituted unborrowed reserve supplies for interest rates in these instructions. *M-1* targeting makes *LM* steeper than targeting on unborrowed reserves over a longer period, because it commits the Fed to reverse any lasting changes in the relation of required reserves to unborrowed reserves. The indexing of interest rates on reserves and discounts, as I have just explained, would automatize and accelerate such reversals. As we would have expected from Figures 1 - 3 and have already observed, monetarist targets and operating procedures have made interest rates much more volatile, and the fulfillment of the monetarist vision will make them more volatile still.

For several reasons, we could expect the location of the *LM* curve to be even more stochastic in the full monetarist regime than it is now. Once *M-1* deposits bear competitive market rates, depositors will have much less

reason than now to "fine-tune" their allocation of funds between *M-1* deposits and other assets, including non-checkable deposits in banks and the new "money market" deposits with restricted checking and transfer privileges. Moreover, the transactions for which *M-1* balances are held are by no means solely GNP transactions. Indeed most debits to checking accounts are for other transactions, largely financial, and the two types are by no means perfectly correlated. The turnover of checking accounts for financial transactions is extremely high (more than four times a day, judging from New York "debits"). In the new regime, moreover, *M-1* holdings for financial transactions would be much larger, and GNP-velocity would be more seriously distorted by variability of finance-related holdings.

Another source of *LM* volatility is connected with intermediation and disintermediation, as these are influenced by borrowers' and lenders' perceptions of the relative risks of short and long commitments. As experience these last three years suggests, increased uncertainties about future interest rates lead borrowers and lenders to shift from long markets, where banks and other suppliers of checking accounts are not active on the demand side, to short markets, where they are active on both sides. The shift increases the size of monetary aggregates that include the short liabilities of those intermediaries. Those bulges are not connected with positive "*IS*" shifts, but indeed possibly with the reverse. *Ross Starr* has documented this effect for *M-2*. In the new regime, the effect could spill into *M-1*.

When banks expand loans to their customers, they must somehow induce the public to hold more of their liabilities simultaneously. As borrowers expend the balances credited to their checking accounts, the direct and indirect recipients have larger balances. At least during the time it takes them to adjust, an *M-1* bulge accompanies an expansion of lending. When the loans are financing real investments, both are indicative of an *IS* shift which it is the purpose of *M-1* target policy to oppose. Sometimes, however, as observed in recent recessions, the loan demand reflects distress borrowing, designed to protect or rebuild liquidity for the borrower and his suppliers. It is a byproduct of a negative *IS* shift damaging to cash flow, rather than a positive one. In this case a constant *M-1* rule aggravates an undesired decline in income. This instability would be magnified in the new regime.

I have argued that in the new regime *LM* would be very steep even in the very short run. In my view *IS* is already very steep in the short run. That is, saving and investment decisions are interest-sensitive only with a lag. In a month or a quarter, expenditures on goods and services, investment and consumption both, are largely the execution of previous decisions, constrained only by current liquidity. Over a longer period, the decisions are

reconsidered and remade, interest rates matter a great deal, and the *IS* curve is more gently sloped.

On the other hand, in our present monetary regime, and especially in our past monetary regimes, the *LM* locus has been significantly steeper in the longer run than in the short run. That is, the accommodative buffers previously discussed were allowed to operate for a while, but the central bank opposed with increasing strength lasting deviations from its targets for the economy or for the aggregates. The move to tighter targets, enforced more promptly, was motivated by the belief that cumulative inflationary movements in the economy got out of hand before the Fed could or would arrest them. But, as I think we have also seen, there is danger in moving too far in this direction. A restrictive non-accommodative policy, a steep *LM* curve, makes interest rates shoot up while having little immediate effect on GNP, as one would expect if *IS* is also steep in the short run. But the big rise of interest rates sows the seeds of subsequent collapse, as the high rates take their eventual toll.

During recession, moreover, the distress borrowing and liquidity syndromes previously described postpone the remedial decline in interest rates that should be the other side of the monetarist coin. As the present case illustrates, the collapse may be so great, the relief may be postponed so long, the real determinants of investment may become so unfavorable, that interest-sensitive expenditures are difficult to revive.

It is hard for me to believe that the Federal Reserve intended or anticipated that its *M-1* targets and operating procedures for 1981 - 82 would produce the dismal GNP history actually experienced. One reason they did, according to the Fed itself, was a positive financial shock, increasing the demand for *M-1*. The test of intention would be whether the Federal Open Market Committee would accept – as I think they would with sighs of relief – a significant surprise burst of velocity growth over the next twelve months. Of course, it is for reasons of this kind that I favor gearing year-to-year Fed policy to more consequential economic variables like GNP, unemployment, and inflation rather than to any intermediate aggregate.

Whatever the Fed's targets, however, I advise caution in moving further toward a monetarist structure of the system. The buffers we have had, even those we still have, serve useful purposes. We can, it is true, have too many buffers and too much accommodation. Since demand (*IS*) shocks, financial (*LM*) shocks, and price shocks, are all likely, the optimal *LM* curve will be upward sloping, neither vertical nor horizontal, neither completely unaccommodating nor wholly accommodating. I suspect we have already made the *LM* curve steeper than optimal. We should not make it vertical. This

means that if the structural changes I have described are adopted for microeconomic reasons – and I am by no means convinced they should be – then the central bank should offset their macroeconomic effects by adopting more accommodative operating procedures and targets.

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Zusammenfassung

Finanzstruktur und geldpolitische Regeln

Die Struktur des amerikanischen Bankwesens und Finanzsystems ist wegen neuer Technologien, institutioneller Innovationen und Deregulierungen einem schnellen und grundlegenden Wandel unterworfen. Insbesondere werden gesetzlich verordnete Zinsobergrenzen für Bankeinlagen, auch für Girokonten, aufgehoben. Es stehen Vorschläge im Raum, auf Bankreserven einen Zins zu bezahlen, der an den Diskontsatz der Zentralbank gebunden ist und den Diskontsatz seinerseits an die Marktzinsen zu koppeln.

Solche Regelungen verändern die Eigenschaften des monetären Sektors, im Hinblick auf dessen Reaktion sowohl auf zentralbankpolitische Maßnahmen als auch auf Schocks, die nicht von der Wirtschaftspolitik ausgelöst werden. Kurz zusammengefaßt laufen die genannten Regelungen darauf hinaus, die *Hicks*'sche „*LM*"-Kurve sehr steil zu machen. Unterschiedliche geldpolitische Regeln verteilen die Wirkungen verschiedener Arten von Schocks unterschiedlich auf Zinssätze, Output und Preise. Die Aufteilung der Wirkung ändert sich, wenn die Struktur des finanziellen Sektors verändert wird. Diese Variationen der Eigenschaften der Funktionsweise des monetären Sektors sind zu berücksichtigen, wenn abgewogen wird, ob strukturelle Reformen erwünscht sein können. Ferner haben sie auch Konsequenzen für die Eignung bestimmter Verfahrensregeln der Geldpolitik.

Summary

Financial Structure and Monetary Rules

The structure of the American banking and financial system is changing rapidly and radically, because of new technology, institutional innovation, and deregulation.

In particular, legal ceilings on deposit interest rates are disappearing, even on checking accounts. Proposals to pay interest on bank reserves at a rate indexed to the central bank discount rate, and in turn to index the discount rate to market rates, may be adopted. These changes alter the properties of the monetary system, in response both to central bank operations and to non-policy shocks. A short-hand summary is that they make the Hicksian "*LM*" curve very steep. Different monetary rules distribute differently, among interest rates, output, and prices, the effects of various kinds of shocks. These distributions are significantly altered when the financial structure changes. Both the desirability of structural reforms and if they are adopted, the suitability of particular rules of monetary policy depend on these alterations in the properties of the system.

Résumé

Structure financière et règles de la politique monétaire

La structure du système bancaire et financier américain subit une mutation aussi rapide que radicale sur base de nouvelles technologies, d'innovations institutionnelles et de la dérégulation. L'on soulignera particulièrement à ce propos la suppression des plafonds légaux des taux créditeurs, même sur les comptes courants. Devraient être adoptées des propositions de paiement d'intérêts sur les réserves bancaires à un taux lié à celui de l'escompte de la banque centrale d'une part et d'ajustement du taux d'escompte aux taux du marché d'autre part.

Ces modifications métamorphosent les avoirs du système monétaire, puisqu'elles reflètent tant les opérations de la banque centrale que des interventions étrangères à la politique économique. Cet état de fait est brièvement mais densément illustré dans la courbe «*LM*» en flèche de *Hicks*. Des règles différentes de politique monétaire répartissent diversement les effets de différentes modifications accentuées sur les taux d'intérêt, la production et les prix. Ces effets de répartition se modifient de manière significative lorsque change la structure financière. Tant l'aspiration à des réformes structurelles que – après leur éventuelle réalisation – l'adéquation de règles spécifiques de politique monétaire dépendent de ces mutations dans les avoirs du système.