

## Uncertainty and the Financial Process and its Consequences for the Power of the Central Bank\*

Most versions of monetary theory attribute great influence to monetary policy. In most versions the authorities determine the 'money supply'; that, in turn, is supposed to determine the price level, either quickly or in some distant equilibrium. Likewise, theory frequently assumes that the authorities fix interest rates, and, by this means, affect investment, and perhaps consumption, and thus the level of economic activity. These are major effects.

But consider, now, central banks, who carry out monetary policy. Central banks are clearly impressive institutions. What central bank officials say affects financial markets: their utterances have therefore to be carefully weighed, and get closely read, like an oracle, for hidden meanings. Nevertheless, central banks are small institutions. The balance sheet of the Bank of England, for instance, is not much more than one thousandth of the combined balance sheet of even the discount houses. It is only about one fifty-thousandth of that of the banks; or one ten-thousandth the size of the national debt. The actions that a central bank undertakes, also, are small in scale. It obtains its leverage over interest rates, in the first place, by affecting the banks' reserves. In the United Kingdom, the operational balances held by the banks at the Bank of England are only about one thousandth of the stock of broad money (M3). On occasion, the Bank lends to the banking system to supplement its reserves; but any addition is small in relation to what the

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\* This paper is based on the book by J.C.R. DOW and I.D. SAVILLE, *A Critique of Monetary Policy: Theory and British Experience* (Oxford University Press, 1988). From one angle, the book is a study of U.K. monetary experience since the early 1970s. Interpretation of that experience required a theoretical framework, which may in large part apply to other countries also. This paper summarises the theoretical argument, without detailed reference to the national and historical context. Both authors are responsible for the ideas in it. Mr. Dow was Economic Director at the Bank of England/Economic Adviser to the Governor, 1973-84; the paper was originally delivered by him as the BP Lecture at the City University, February 1988.

banks hold already. It may charge a penal rate for doing so. But the penal element is, again, relatively small: by itself it adds only a trivial amount to the total of what banks have to pay for the funds they lend.

It is evident, then, that central banks rule with a very gentle touch. The questions are: how do they achieve such widespread effects and, just how far do these extend? It is, I think, legitimate to make a distinction between financial markets and the real economy — by which I mean the output of goods and services, and the price of such output. It is a matter of direct observation that central banks have great influence on financial markets. But how far does this carry over into the real world, and affect the level of prices and activity?

I have entitled this paper "Uncertainty and the Financial Process". By 'financial process' I mean the way in which the quantity of financial assets, and their price (and hence the yield or interest rate on them) adjusts to changing circumstances, including a rising trend in national income. There are links between the yield on financial assets and that on real assets. My thesis will be that, in a world of great uncertainty, these links are weak. That makes it easier for the monetary authorities to influence the price of financial assets. But the link with the yield on real assets is not non-existent. This imposes limits on the movement of financial asset prices — and hence also on the ability of the authorities to influence them.

I shall deal, first, with the determination of exchange rates; second, with interest rates; third, with the money stock; and fourth, with monetary control.

### Exchange rates

First, then: what determines exchange rates? Freely floating rates are clearly liable to great fluctuations: but not without limit. The picture I have is that, within a large range, exchange rates are subject to erratic expectational factors; but that 'fundamental factors' set bounds to the range of exchange-rate fluctuation. I must start with some elements which are fairly familiar.

One may ask, first, how things would work if fundamental factors did not merely provide boundary conditions, but fully determined exchange rates at each point in time. This requires use of the idea of the

equilibrium exchange rate. Older theories saw the equilibrium exchange rate as the price which brought the current balance of payments either into balance, or into equality with a sustainable capital flow. The equilibrium exchange rate would thus depend on the conditions of supply and demand for exports and imports; and if the actual exchange rate was always in equilibrium, it would be determined by these conditions.

This story is made more complicated, but is not displaced, when account is taken of international capital mobility. That makes it necessary to see exchange rates in terms of the advantages of holding assets of different sorts. In a world where exchange rates were firmly expected to be stable, similar assets in all countries would in equilibrium yield an identical expected return. In fact, future exchange rates are highly uncertain, so that exchange risk complicates the picture.

Most citizens are not world citizens, but citizens of one country; and, other things equal, prefer to hold assets in terms of the currency of the country where they live. They will hold assets denominated in foreign currencies, or undertake real investment situated in other countries, only if there is additional gain. The gain may either be because the profitability, in the absence of exchange-rate changes, is particularly great; or because they expect an exchange rate gain, *i.e.* a depreciation of their own country's currency as compared with that to which they move. The more they expose themselves to exchange risk, the greater the risk premium they require to make it seem worthwhile.

A continuing current account deficit entails just such a progressive increase in that kind of exposure — a progressive increase in residents' foreign debt, or in foreigners' holding of what to them are foreign assets. Consequently the exchange rate will be driven down to the point where expectations of subsequent appreciation make acceptance of risk exposure attractive. In time, the depreciation will produce a correction of the current account — so that one can still say that current-account considerations determine the equilibrium exchange rate. But current account adjustments are slow, taking half a decade or more. In order for the behaviour of the exchange rate to be smooth, foreigners would have to be prepared to hold the currency for five years or so in expectation of a continuing appreciation over the period.

In fact, few operators are ready to act on such a long-term view. For the future equilibrium level of the exchange rate can be only dimly perceived: neither economists nor market operators can calculate it at all precisely. Most operators therefore have short-term views. Whether

there will be short-term exchange rate gain from holding a currency, depends on whether other operators bid up its price. They, too, are influenced by how they expect others to behave. Exchange markets may thus be affected by crowd psychology, which makes floating exchange rates potentially highly erratic.

There are however limits to their volatility. The vague perception of the equilibrium level of the exchange rate, which is all that exchange markets have for most of the time, gets clarified if exchange rates get very low or very high. This is either because trade flows begin to react more quickly; or at least, because it becomes increasingly clear that sometime they will react. When that happens, the excess supply of (or demand for) the currency will begin to be corrected. Thus, beyond a point, extreme levels of exchange rates will appear unlikely to be sustained. Keynes (talking of equity markets), drew a distinction between the 'serious-minded' individual who purchases on the 'best long-term expectations he can frame', and the 'game players' intent on short-term

gains; and added: it makes a 'vast difference' which predominates. The more extreme the level of exchange rates, the more will the 'sober-minded' view set the tone within which the 'game players' operate. Thus the 'fundamentals' provide boundaries to the movements of rates, even though they do not rigidly dictate rates within these boundaries.

Though many elements in the argument are familiar, I have not seen them put together in quite this way. It seems to provide a plausible account of why exchange rates vary so much, and what sets the limits. Within a range, exchange rates appear indeterminate. Beyond that, 'fundamental' balance of payments considerations take over; and that puts limits to the range of volatility.

These limits are evidently fairly wide. No one can know exactly what is the equilibrium value of an exchange rate at any time; but it is unlikely to change violently over a few years. Observation of how major currencies have behaved suggests that the limits must be 10 or 20% either side of where the equilibrium must be supposed to be.

We now have a basis from which to examine how it is that the authorities can influence the somewhat fluid state of exchange markets. They can alter exchange rates by buying or selling foreign currency; or by changing interest rates. But each of these means is limited — and, at times, easily overwhelmed by contrary market forces. At other times, they are not: if the authorities carry market opinion with them, token action may suffice.

The explanation, I suggest, must be that when the authorities are successful they succeed primarily by affecting market expectations. Because the level of a floating exchange rate a month, or a year, hence is highly uncertain, market expectations are weakly held. Expectations are influenced by many chance events, and markets clutch at any clue. What the authorities do, or say, or even are thought to think, may then be disproportionately influential. For they are seen as potentially powerful operators; and a small action now may be taken to carry the promise of further action later should that be required. But official policy must appear consistent and sustainable, and not to fly in the face of the fundamentals. Its credibility is fragile and easily lost; and, once lost, not easily regained. The authorities thus have great power over exchange rates, but within strict limits.

Economic theory is largely built on the notion that a disequilibrium sets up corrective forces, so that equilibrium governs the movement of the system. I have sought to build a picture in which the importance of such fundamental forces is not discarded, but where the system operates in a loose-jointed way. Because of the prevalence of uncertainty, there is an area of indeterminateness where such forces do not dictate what happens, and where events are determined by erratic speculative factors. Because events are not rigidly determined by fundamental forces, and because expectations are diffuse, the way is left open for the authorities to exercise influence. This picture will be useful in discussing interest rates, to which I now turn.

### Interest rates

In the last twenty years, interest rates have varied much more than previously. This is not simply a matter of higher, and more variable, inflation rates. As far as one can guess, real rates of interest must also have varied considerably — possibly within a range of as much as plus or minus 5%.

There are three questions to which I hope to provide some sort of answer. First, how can such variability occur? Second, what limits the range of variation — why have interest rates not varied even more? Third, how do central banks affect interest rates — as I take it as a fact that they do? When the central bank raises its lending rate (which I will

call central-bank rate), other interest rates also rise. This is not because the central bank buys or sells financial assets on any large scale: how then does it do it?

To answer these questions one needs a general theory of what determines interest rates. Though the general question was much discussed by economists up to about 1960, that confused debate has since then gone strangely quiet. My best way in is to start with Keynes's objections to what he called the classical theory of interest. Whether or not Keynes was right about what his predecessors thought, it is a possible view, which is still around. He was attacking the view that the rate of interest is the price which reconciles saving and investment — the desire to save and the desire to invest.

Savings and investment are flow concepts — additions to accumulated wealth and additions to the capital stock. It would nowadays be agreed that the classical theory should be restated in terms of stocks — so that, on this view, the rate of interest is the price which reconciles the desire to hold wealth, rather than add to or consume it, with the desire to employ real assets productively. If that were true in any simple sense, the rate of interest would be rigidly determined by these propensities. There would be no room for the authorities to affect it, except by changing their own saving or investment on what would have to be a large scale — which is not how it works. That is one reason for thinking the classical theory must be wrong or incomplete.

The more basic argument against it starts from the fact that adjustment of the stock of wealth and capital, in response to interest rate changes, is slow. Suppose for instance that saving rises from one year to another by 10%, while the desire to invest remains unchanged. On the classical theory, that would put downward pressure on interest rates, and that in turn would stimulate investment (and perhaps reduce saving). Given time, things might work out that way, and equilibrium between savings and investment be restored by that route. But the system cannot wait for that. There is an immediate discrepancy between saving and investment, which has to be corrected somehow. The rise in saving, thus fall in spending, will produce a fall in income, which must proceed to the point where saving has been brought back to equality with investment by this second route.

I now come to the nub of my argument. Since equality between them has been restored, the force which was supposed to put downward pressure on interest rates has been removed. The classical mechanism does not even begin to work: it is forestalled by the income-adjustment

route, which works more quickly.<sup>1</sup> The important conclusion is that the rate of interest is not determined by the propensities to save and invest.

The reason why the stock of wealth and of capital is slow to adjust has something to do with the fact that the stocks are very large — large for instance in relation to income — so that adjustments have to be slow. In a perfect world, the results could still be foreseen, and acted on immediately. The fact that they are not has much to do with the vast uncertainty of the future.

All these considerations may not have been clearly stated by Keynes. He was clear that since saving and investment are not reconciled by the rate of interest, the job has to be done by adjustments of income and output. I might add in parenthesis that this means that the malfunctioning of the economic system which results in unemployment arises, not in the labour market as sometimes said, but in the capital market. That, I take it, was Keynes's central insight. Subsequent discussion has been dominated by Hicks's IS/LM diagram, in which Keynes's central point is indeed implicit. But Hicks was trying to reconcile Keynes with the classics, and put little emphasis on it, and it has since been rather lost to sight.

What I have left to add parallels what I said about exchange markets. If the propensities to save and invest are not reconciled by the rate of interest, the rate of interest is left indeterminate in terms of these fundamentals. It is therefore left free, at least within a range, to be determined only by expectations of future interest rates. Since in normal times the market is dominated by short-term operators, market opinion is likely to be erratic, fed by hopes of short-term gain, or fears of short-term loss. That explains why interest rates are variable.

It remains to explain why they do not vary even more than they do. Perhaps the answer is as follows. At extreme levels of interest rates, there would begin to be quick, or clearly predictable, effects on investment (and perhaps on saving). No one would invest in real assets if interest rates on financial assets could somehow be pushed up to 100% a year. That would reduce the demand for funds, and perhaps also increase the supply; and these consequences would be increasingly clearly foreseen. It would then seem increasingly unlikely that interest rates would stay that high; and short-term operators would cease to bet

<sup>1</sup> *Ex post* saving and investment must be equal at each point in time. The equality of *ex ante* saving and investment is achieved only gradually by adjustments of income — but more rapidly than the response to the change in interest rates, if that route were able to work.

on it. At the extreme, 'the fundamental forces of thrift and productivity' come into their own, and set bounds to the variation of market rates.

This account echoes that suggested for exchange rates, and helps to provide a similar basis for explaining how the authorities influence interest rates. Because future interest rates are highly uncertain, expectations about them are weakly held; and markets clutch at even trivial pointers. In the prevailing lack of hard information, the acts or views of the authorities exert disproportionate influence: and memory of their past dominance reinforces their present influence. The central bank's power over interest rates derives, in short, from its power to influence interest-rate expectations.

This power, however, is again not unlimited. It is bounded — like the range of variation of interest rates in general — by the fundamental forces of thrift and productivity. The central bank's power over interest rates (like that over exchange rates) depends on taking market opinion with it; and at extreme ranges, this power would evaporate.

Since the central bank operates by affecting interest-rate expectations, all interest rates, long and short, are affected. The rates charged or paid by banks are traditionally particularly closely tied to central-bank rate. But this would hardly be possible if other rates did not move in sympathy: a rise in central-bank rate would otherwise price banks out of the market. This observation will be important for what I have to say about control of the monetary aggregates.

One general implication of these propositions is worth noting. As already argued, if interest rates had quick and large effects on saving and investment, the central bank would not be able to affect them in this way: the classical mechanism would prevail. To put this theoretical point in a paradoxical way, one can say that central banks are only able to manipulate interest rates because interest rates themselves do not matter much. This, however, is not to deny the practical point. Since the stocks are very large, even the small effects that central banks can exert over investment by varying interest rates, may be a significant plus or minus to total demand in a transitional shortish medium term. Much the same is true of exchange rates.

In this discussion of interest rates, I have again sought to paint a picture of a loose-jointed system, in which real forces set bounds to the movements of financial variables; but where, within that range, the prevalence of uncertainty about the future leaves interest rates indeterminate — and thus allows both free play to short-term expectational factors, and scope for the authorities to influence expectations and hence interest rates.

### The stock of money

So far I have been discussing the price of financial assets. My next question concerns the stock of such assets, and in particular what determines the stock of money. In the United Kingdom most emphasis has been placed on broad money (M3), most of which consists of bank deposits; at a first approximation, one may ignore notes and coin. Bank deposits are matched by bank loans. To explain the behaviour of money one thus needs a theory of the behaviour of the banking system. Building societies are increasingly like banks, and what I have to say may easily be extended to cover them.

What, then, sets the limits to the size of the banking system? Banks may be seen as intermediaries, channelling funds from savers to investors — or more strictly, from agents in financial surplus to agents in financial deficit. In performing this function, banks are in competition with non-bank routes for financial flows, for instance via securities markets. One may then construct a portfolio theory of the banking system, as Tobin has done. Taking the total flow of finance as given, the equilibrium size of the banking system can be seen to depend on the preferences of savers and investors as between bank and non-bank debts and assets, and the relative efficiency of banks as intermediaries. Given constancy in these determining conditions, one would expect the size of the banking system to grow with a growth in the total flow of finance, such as will normally accompany growth in the real national product or its price.

Consider what would happen if banks tried to extend their lending beyond the equilibrium point. Their increased lending would create bank deposits larger than savers wished to hold at prevailing relative interest rates. Savers would seek to buy more non-bank assets,<sup>2</sup> which would drive up the price of such assets and reduce the yield on them. That in turn would make it cheaper than before for borrowers from banks to borrow through securities markets, and repay (or 'fund') some bank loans — thus restoring total bank lending and deposits to their equilibrium scale.

<sup>2</sup> This assumes that the stock of financial assets which 'savers' have decided to hold depends on their income and perhaps in small degree on the average level of interest rates — but not on the pattern of relative interest rates (which is here in question). Savers with temporarily excess holdings of bank deposits, therefore, do not seek to spend the excess on current goods and services.

In fact banks are not so closely hemmed in — for two, chief reasons.

First, there are obstacles to the process of funding. That involves a shift in the composition both of the public's holdings of assets, and in its debt, each of which may be impeded. On the assets side, there may be *too many* close substitutes for bank deposits. Holders of excess money are likely to switch into them (into building society deposits, national savings instruments, or bills). Since interest rates on close substitutes are closely related, a desire to switch out of money will cause little change in relative interest rates — and thus create little incentive to borrowers from banks to find other sources of finance. On the side of the public's liabilities, there are often *too few* substitutes for borrowing from the banks. Persons and small firms have no ready alternatives (basically because non-bank lenders cannot easily judge their creditworthiness) — so that the banking system here faces little competition. Recent bank lending has been disproportionately to small borrowers; and there seems little chance that this major part of their lending could ever be funded (it could only be repaid if borrowers changed their minds about borrowing at all).

The second important qualification to the idea that market forces limit the scale of banking is that banks ration credit. Banks do not stand ready to lend to anyone as much as he would like to borrow at the going rate of interest. Rather, they impose limits based on their assessment of his creditworthiness. There are various views as to why banks act in this way. My own are somewhat different from those for insurance of Stiglitz and Weiss. I see it as another manifestation of uncertainty — uncertainty in the Knightian sense<sup>3</sup> — the argument being that lenders' risks are not amenable to precise assessment; that banks are risk-averse; and that rationing individual loans is a way to reduce the risks of default. It is worth remarking as an aside that the same applies to borrowing in securities markets: at any given date, even a large firm cannot sell unlimited quantities of equity or debt. The prevalence of rationing means that banks usually have a 'fringe of unsatisfied borrowers' — or borrowers who are incompletely satisfied. They can therefore increase their lending if they want to; and it seems clear that the standards of creditworthiness which they set themselves can and do change.

A third feature of bank lending also needs to be noted. At first glance, it may seem natural to suppose that people will only borrow

<sup>3</sup> As opposed to risks whose probability can be quantifiably assessed.

because they want to spend the proceeds. But they may also borrow in order to hold larger liquid balances; and there seems to be evidence that much recent borrowing has in fact had this motive. A person can otherwise increase his holding of money only by spending less of his income, or by selling non-monetary assets; and borrowing from the banks for this purpose may involve less sacrifice. The greater ease of borrowing in recent years may have opened up this possibility; and in such a case the demand both for bank loans, and to hold money balances, may be highly elastic.

Twenty-five years ago, people tried to explain the quantity of broad money in terms of the levels of national income and of interest rates. Four factors that I have mentioned — the fact that all interest rates vary together; the banks' ability to vary their lending criteria; the obstacles to funding bank loans; and the possibility of increasing money balances by incurring bank debt — must all undermine the stability of demand-for-money functions; and probably help to explain why, for broad money, a simple relationship of this sort can no longer be found.

There has been some tendency for broad money to grow in line with the value of nominal GDP. But in the United Kingdom there have been two periods since the early 1970s — one short and one still continuing — in which it grew significantly more rapidly, as well as a short period in which it grew more slowly. The factors mentioned above have probably all been important in explaining these variations. In a sense, the recent rapid growth of broad money can be viewed as a result of financial innovation in response to more competition. But that is rather a general explanation, and it is more enlightening to look more deeply.

This does not imply that there are no limits to the scale of bank lending. Lenders' and borrowers' preferences must clearly set some limits, even though not very clearly defined. Here too we have a loose-jointed system.

### Monetary control

Finally I must consider what all this means for policy. The aims of monetary policy have differed widely at different times. Over the last decade, and in most industrial countries, the aim has been to control the

rate of growth of one or more monetary aggregates. This has presented difficulties; and I must now consider why; and, finally, how much it matters.

In the U.K., the primary aim has been to control broad money (M3). That objective has now faded, but the growth of broad money is still not held to be quite irrelevant. The main instrument employed was use of central-bank rate.

The growth-rate of broad money (mostly bank deposits) depends on how rapidly banks increase their lending. As GDP rises, and with it the incomes and profits of would-be borrowers, banks are likely to increase their lending. One way in which monetary policy might hope to work might be to raise interest rates sufficiently to depress investment, and thus reduce GDP; and thus, indirectly, to slow bank lending. That kind of policy would be like wagging the dog to wag the tail; and would clearly have to be pushed hard to have much effect. The arguments against it are, first, that central banks' power to push up interest rates is, as I have argued, essentially limited; and, more practically, that a deliberate effort to create major recession would be economically costly and politically unattractive. That was not the aim.

The aim then was not to reduce borrowing in total, but to reduce borrowing from the banks by diverting borrowing into other channels. The hope has been that raising central-bank rate would have this effect.

Now I have argued that raising central-bank rate, by raising interest-rate expectations, raises all interest rates. Thus it has little or no effect in making bank finance relatively more expensive. Moreover, even if there was some incentive to move out of bank finance, to many borrowers the relative advantage of bank credit is so great that the diversionary effect would be small and delayed. In fact, the pace of bank lending has appeared impervious to variations in central-bank rate.

There is more hope of controlling a narrow monetary aggregate, such as M1. A narrow aggregate is likely to consist, in part, of deposits which are not interest-bearing. A rise in interest rates is, then, likely to curtail such deposits. The result will be that banks lending is unaffected, but will be met to a greater extent by interest-bearing deposits (which may not be included in the definition of the narrow aggregate). This is not perhaps a very significant result. Moreover, there are limits to this process. If there were a persistent tendency for the narrow aggregate to grow 'too fast', a continuously *rising* level of interest rates would be required to counter it; and there will come a point, I have argued, beyond which that is not possible.

Rather than this discretionary use of interest rates, many would prefer use of monetary-base control. The principle can be put as a syllogism. Major premise: banks need to hold a fraction of their deposits as reserves (in the U.K., for instance, as deposits at the central bank). Minor premise: central banks can control the size of such reserves (by means which I will not go into). Conclusion: central banks can control the total of bank deposits.

But how would this work out in practice? Individual banks can obtain reserves from other banks by borrowing; and if the whole system were short of reserves, competition for them would drive up short-term interest rates. The theory is that this would force up bank lending rates, and thus curtail the demand for bank loans. But what we know of the present system suggests that this would not happen. All interest rates would rise, providing no incentive to disintermediation. Bank lending would therefore not be curtailed; banks would merely be left with uncomfortably low reserves.

To prescribe a statutory minimum on the banks' reserve/deposits ratio would hardly help. The banks could only comply with the ratios if they got together, and set up a self-imposed system of rationing their lending. The effect would be the same effect as an official control of bank lending. It would divert flows to the nearest available substitute channel, in particular to bill finance — an effect usually dismissed as merely 'cosmetic'.

There are some other things that can be said about other methods of monetary control — in particular, direct lending controls, and methods of financing (including over-funding) the government's need. But broadly speaking that, as I see it, is where the debate about monetary control has run into the sands. As belief in the efficacy of monetary control has waned, monetary targets (in the U.K. at least) have been more or less abandoned; and the emphasis of monetary policy has shifted towards management of the exchange rate — as is, I believe, entirely sensible. What I have been saying may then perhaps be at the dead centre of current orthodoxy (1988 version).

But there has possibly been a practical conversion only, forced by the failure of monetary control to work. It is less clear that there has been disenchantment with the purpose underlying the experiment with monetary targets. It may then be worthwhile to look at the underlying belief — which, briefly, has been that the size of the stock of money matters because it affects the price level. There seem two sorts of objection to this idea.

It is clearly the sort of proposition that depends on there being some fixed coefficients in the economic system, of which there are other examples in the history of controversy. I will start with a parallel argument in a different field. It used to be argued, particularly by scientists and engineers who believed in fixed coefficients, that since world supplies of materials were finite, this would eventually bring economic growth to a halt. Economists have usually poured scorn on such projections, arguing that coefficients were elastic; that shortages would raise the price of short materials; and thus foster alternative processes less dependent on them. Nature has a way of finding ways round fixed obstacles.

In the same way it should surely be argued that a fixed stock of money would promote the use of near substitutes for money; and that economic growth would proceed despite the fixity of the money stock.

Precisely the same reasoning should apply to a progressive increase in the price level. Money creation is part of the market economy; banks, if allowed it, are likely to create more money as the price level rises. Prohibitions on their doing so would force non-banks to create near-money, as the next best way of supplementing the function of bank intermediation in face of a growing demand for it as a result of a continuing rise in the price level. Thus the price rise would not be inhibited.

The second argument is that the considerable powers of central banks do not extend to being able to arrest the process of money creation except by means that amount to direct prohibitions. If these are agreed to be useless, central banks are powerless in this respect. Prices determine money, not the reverse.

The idea that control of the money stock provides a means to anchor the price level is deeply entrenched in economic discussion. It is not a purely monetarist idea, but is an ingredient in much other recent macroeconomic theory; and has wide popular appeal. But for the reasons set out, I conclude it ought to be abandoned.

## Conclusions

I have both sought to explain how central banks — which are, as I have said, small bodies — nevertheless have considerable influence; and I have also sought to define the limits of their influence. In understand-

ing the power of central banks, both its sources and its limits are important.

I have argued that the existence of uncertainty means that there are loose links between financial developments and the real economy. This provides room for a central bank to exert considerable influence, within a certain range, on exchange rates and the price and yield of domestic financial assets. The variations in asset prices so brought about have a certain effect on the scale of domestic and foreign investment, and, via the exchange rate, on the price level. But that is true only within a range. Though the effects may be significant in the short-to-medium run, this does not enable a central bank to exert a continuing effect in the longer run on output or the price level.

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