

Passive Money, Active Money, and Monetary Policy

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- *The role of money in the transmission of monetary policy is still controversial. Some regard it as reacting passively to changes in prices, output, and interest rates; others see it playing an active role in bringing about changes in these variables.*
- *Empirical evidence favours an active interpretation of money's role in the Canadian economy, particularly in the case of narrow, transactions-oriented aggregates.*
- *Institutional changes can, and do, create instabilities in the demand functions for narrow aggregates, which undermine their usefulness as formal policy targets.*
- *There is, nevertheless, a strong case for the Bank of Canada to pay more attention to narrow monetary aggregates than it has in the 1980s and 1990s.*

For eight years, an inflation target, jointly set by the Bank of Canada and the federal government, has provided the anchor for Canada's monetary policy. For a period 20 times as long, the Quantity Theory of Money has provided economists with a framework for analyzing the influence of the supply of money on the inflation rate. The Bank of Canada regularly comments on the behaviour of the narrow M1 and the broader M2 aggregates in its *Monetary Policy Report* and in the *Bank of Canada Review*, but the Quarterly Projection Model (QPM), which currently provides the analytic background against which the Bank's policies are designed, includes no monetary aggregate.¹ Even so, there is a strong case to be made that the money supply is not only the key long-run determinant of inflation in the Canadian economy but is also an important variable in the transmission mechanism through which policy actions affect the price level, and, in the shorter run, income and employment as well.

This article first discusses the view that money is a passive variable, which adapts to, but has no causative significance for, the behaviour of prices and output. It then argues that money is better regarded as playing an active role in the transmission mechanism of monetary policy. It concludes that there is, therefore, a case for according monetary aggregates a more formal role in the Bank of Canada's policy framework than they now hold.²

1. For an account of QPM's basic structure, see Poloz, Rose, and Tetlow (1994). For the interaction between its structure and the Bank's policy-formation process, see Duguay and Longworth (1998, Part 5).

2. The terms *active* and *passive* should not be confused with exogenous and endogenous. Their meaning is discussed in detail below. These terms seem to have originated within the Bank of Canada, but I have not been able to track down their first appearance. See Engert and Selody (1998) for a recent example.

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Passive Money, Active Money, and the Transmission Mechanism

Like the Quantity Theory of Money, the view of money as a passively endogenous variable has a long history, but its most recent origins are in a simple variation on the once-standard IS-LM macroeconomic model.³ That model traditionally treated the quantity of money as an exogenous variable, with the rate of interest determined within the system along with real income and, in more elaborate versions, the price level. However, when it came to applying the model to the actual conduct of monetary policy by real-world central banks that used an interest rate as their policy instrument, it seemed more “realistic” to reverse this arrangement. Thus, the interest rate is exogenous, and the supply of money adjusts passively to demand, as determined by the rate of interest, real income, and the price level.

This passive-money view can be supplemented by a well-worked-out story about the links between a change in the interest rate and its ultimate effects on output, employment, and the quantity of money: When the monetary authorities lower (raise) the rate of interest, the demand for money increases (decreases), and the money supply must begin to rise (fall) in order to keep the interest rate in place. In an open economy, the currency is also likely to depreciate (appreciate) relative to whatever path it is initially following. Only subsequently do first output and then prices begin to respond to the interest rate and the exchange rate, inducing further changes in the demand for, and therefore the supply of, money.⁴

The foregoing story is, however, incomplete. This may be seen most easily by abstracting from open-economy complications that do not change any fundamen-

als, and by considering the theoretically limiting case in which the interest sensitivity of the demand for money disappears. In this case, it has sometimes been argued that, since control of the money supply works through that very interest sensitivity of demand, it is impossible for the authorities to increase the quantity of money in circulation by lowering the interest rate and, hence, impossible for them to set the transmission mechanism in motion.⁵ Implicit here, however, is the implausible assumption that the sole reason members of the non-bank public transact with the banking system is to vary their money holdings. In fact, regardless of effects on the demand for money, when the interest rate is cut, the willingness of households to borrow to finance, say, purchases of durable goods grows, as does that of firms to finance, say, an increase in inventories. These are the effects, not of changes in their demand for money, but in their supply of indebtedness to the banking system.

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When an increase in this supply is met by an increase in the volume of loans made by the banks, however, the supply of bank liabilities also increases as a matter of accounting necessity. And in a simple world in which all bank liabilities are money, so does the supply of money, even though there has been no increase in demand.⁶ This happens even though the non-bank public’s transactions with the banking system are voluntary. Its members accept newly created money from the banks in exchange for evidence of their indebtedness because they wish to use the money to purchase

3. The first geometric exposition of IS-LM was done by Hicks (1937). He discussed both the exogenous money/endogenous interest rate and the exogenous interest rate/passively endogenous money versions. The passive-money view is closely related to the analysis of nineteenth century British anti-bullionists and exponents of the Banking School position, as readers of Jacob Viner (1937) or Lloyd Mints (1945) will recognize.

4. This view underlay the Bank of Canada’s implementation of money-growth targeting in the late 1970s. The narrow M1 aggregate was given a strategic role partly because its demand seemed to be linked to an interest rate variable by a relatively large and well-determined coefficient, thus facilitating control of its growth with an interest rate instrument. A contemporary symposium on the program is Courchene, Fortin, Sparks, and White (1979). The Bank of Canada’s control technique was chosen by careful analysis of the characteristics of alternative procedures, carried out in the context of an explicit IS-LM model. See Freedman (1981). For a contemporary account of the difficulties the Bank encountered with money-growth targeting, see Thiessen (1983), and for a retrospective account, see Duguay and Longworth (1998, Part 2).

5. This argument is not the straw man it might appear to be at first sight, since a number of well-known economists have advanced it. It seems to originate in Keynes’s (1936, 197) *General Theory*. It has also appeared in the works of Gramley and Chase (1965), Hahn (1971), and Hicks (1982, 262–4), among others.

6. The passive-money view, built upon IS-LM, ignores the market for bank credit, as Karl Brunner and Allan Meltzer argued from the 1960s onwards. See Brunner and Meltzer (1993) for a retrospective account of their analysis and for references to the earlier sources in which they first set it out.

goods, services, or other assets—not because they wish to add it to their cash balances.

Now it may seem an odd idea that any agent, let alone the non-bank public as a whole, can be “off” its demand-for-money function. However, the quantity of money that any agent “demands” is not a fixed sum to be held at each and every moment, but rather the target value of an inventory—sometimes termed a buffer stock—the actual value of which will fluctuate around that target as the agent’s streams of income and expenditure are subjected to various shocks, both under and beyond that agent’s control, both foreseen and unforeseen. Hence, there is nothing odd about an agent being off his or her demand-for-money function, even as a consequence of engaging in voluntary exchange.⁷ Furthermore, any economy-wide shock that affects all agents in the same direction will also have observable consequences at the level of the economy as a whole. An increase (or decrease) in the aggregate money supply, not initially matched by a change in agents’ target money holdings, is just such a shock. Money put into (or taken out of) circulation has to go (or come from) somewhere, whether or not agents want to hold it (or relinquish it), and such an increase (or decrease) will initially show up as an increase (or decrease) in the sum of individual agents’ money holdings over and above (or under and below) their desired levels.

Even so, a “transitory” shock to the money supply, which pushes the economy off its demand function only temporarily, is unlikely to have any consequences, because it will be, and will be expected to be, quickly reversed. A “permanent” shock is a different matter.⁸ Once agents perceive that a shock is permanent, they will face the prospect of holding stocks of real money balances whose implicit service yield is lower on the margin than that available on other assets. They will therefore try to reduce the size of those stocks. What transpires next will depend,

7. Indeed, the widely taught Baumol (1952)–Tobin (1956) inventory-theoretic model of the demand for money embodies just such effects. In S–s inventory-theoretic models (e.g., Miller and Orr 1963), the demand for money emerges as a range between upper and lower limits, rather than as a specific amount. To the best of my knowledge, the first use of the term buffer stock in the sense employed here was by Friedman and Schwartz (1963) in their article “Money and Business Cycles.”

8. From the 1970s onwards, Brunner and Meltzer argued that confusion between permanent and transitory shocks was far more important than that between economy-wide and localized shocks in ensuring that monetary disturbances have significant real effects. See Brunner and Meltzer (1993).

among other things, upon the nature of the monetary system.

It is helpful to consider, as a first step (but only as a first step), the theoretically special case where the nominal money supply is an exogenous variable that enters the system, not through bank lending at all but “as if” it had been dropped from a passing helicopter, to invoke Milton Friedman’s (1969) simile. Here, it is obvious that individual agents who wish to reduce money holdings towards a target level can do so only by transacting with other agents. It is equally obvious that such transactions, in and of themselves, do nothing to eliminate excess money holdings at the level of the economy as a whole. Hence, these transactions will continue until rates of return on other assets, including consumer and producer durables, have been bid down, and/or output and/or the price level have been bid up, to whatever extent is necessary to bring the economy’s demand for money into equilibrium with the new, higher money supply.⁹ In short, exogenous money plays an active role in the transmission mechanism.

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Similar effects occur in an economy where the financial system consists of a central bank and commercial banks, all of whose liabilities (except for those held by commercial banks themselves) circulate as money. Here, an interest rate cut engineered by the central bank, which initially leads to a permanent increase in the non-bank public’s demand for nominal bank credit, also produces a permanent change in the banking system’s supply of nominal monetary liabilities.

9. A distinction is sometimes made between one transmission mechanism, associated with the passive-money view, that works through interest rates, and another, associated with the active-money view, that relies on the direct effects of excess money holdings on expenditure. As should be apparent from the text, this distinction has no theoretical basis. It would be more accurate to say that the active-money view pays more attention than does the passive-money view to the role played in the transmission mechanism by unobservable implicit own rates of return on such items as money balances and consumer and producer durable goods.

As in the helicopter-money case, some argument or arguments in the economy's demand-for-money function have to adjust to restore equilibrium between the supply and demand for money. The monetary policy transmission mechanism thus involves not just the first-round direct effects of a lower interest rate on aggregate demand, but also the subsequent effects of an accompanying excess money supply on expenditure flows. In this case, the quantity of money is an endogenous variable, but it nevertheless plays an active role in the transmission mechanism.

Now, a policy-induced cut in interest rates is not the only shock that can set in motion a series of events such as have just been described. Fiscal expansion financed by money creation can do so, as can a disturbance on the demand side of the market for bank credit. A positive shock to productivity, for example, or to consumer or business confidence, can increase the proclivity of private agents to borrow from the banks. Monetary expansion will occur in response to any disturbance to the margin between the non-bank public's supply of indebtedness to the banking system and its demand for stocks of durable goods and other assets, not just to a monetary policy action taken by the central bank.

Matters are more complicated when a significant fraction of the banking system's liabilities are instruments that are not themselves means of exchange. This is precisely the case directly relevant to the conduct of monetary policy in the Canadian, and indeed in any other advanced, economy. Here, one must distinguish between narrow and broad money and note that an agent with excess narrow-money holdings has the option of purchasing some less-liquid financial asset issued by the banking system. Such a transaction reduces not only that individual agent's narrow-money holdings, but the overall quantity of narrow money in circulation as well, without the need for any simultaneous adjustment in the size of the banking system's balance sheet. In this case, a shock that leads to a permanent increase in the supply of bank credit might produce only a transitory increase in the quantity of narrow money. If so, then, assuming that its demand function is empirically stable, narrow money will still be a useful indicator of the stance of monetary policy, but it will have no causative significance, and the passive-money view will provide an excellent approximation to reality.

Though this is what could happen, it need not happen. The actual outcome will depend on the behav-

our of the agents who receive newly created means of exchange from those who borrow from the banks and spend the proceeds, and it seems impossible to generalize here. A firm selling consumer durables, whose inventories and degree of bank indebtedness are both initially too high for comfort, will presumably devote an inflow of cash resulting from the sale of some item out of inventory to reducing that indebtedness. Newly created money will, in this case, quickly disappear from circulation. If that firm initially has equilibrium levels of inventories and indebtedness, the cash inflow might instead be spent on replacing the item sold and would remain in circulation for a little longer, depending upon the actions of those further along the transactions chain. Or again, if the firm is willing to tolerate a lower inventory for awhile, but feels comfortable with its level of bank debt, its newly acquired cash might be parked in some form of notice deposit, pending a later decision. This would reduce some narrow measures of the economy's money supply but, perhaps, not the broader ones. And so on: there is virtually no limit to the possibilities we could envisage here, a sure sign of some deficiency in our theoretical understanding of the matters under discussion.¹⁰

Some Empirical Regularities: The Demand for Money and Money as a Leading Indicator

To turn to empirical evidence to provide some hints about how these effects play out in practice is not unlike allowing data to determine the values of "free" parameters in an incompletely specified model. It is no substitute for attempts to advance theoretical understanding, but it is a useful complement, because it can provide some stylized facts to discipline theoretical conjectures.

Friedman's (1956) suggestion that the demand for money is an empirically stable function of a few arguments was too optimistic, but there is much evidence consistent with the view that velocity is the outcome of the systematic portfolio choices of individual

10. This is a deficiency that those monetary general equilibrium (MGE) models that focus on "limited participation" in financial markets and on portfolio-adjustment costs might help us to repair. Such models are well adapted to dealing explicitly with a sequence of events in which money is injected by way of bank loans to firms and then is paid out to households, which in turn, take portfolio-allocation and expenditure decisions influenced by their cash receipts. These decisions, in due course, impinge again upon banks and firms, and so on. See Hendry and Zhang (1998) for an example of work in this area.

agents, even if changes in the constraints imposed upon those agents by the structure of the financial system do, from time to time, cause the demand-for-money function to shift.¹¹ Such evidence is neutral between passive and active views of money. Indeed, at first sight, the form of equation best adapted to pinning down the demand-for-money function appears more easily reconciled with the passive view. Economists estimating that relationship have habitually used the quantity of money actually in circulation as their dependent variable, and (except when using data that are highly aggregated over time, e.g., cycle-phase or even cycle-average measures) their estimates have usually been improved when they allowed for the existence of significant time lags in the response of their dependent variable to the demand function's arguments by adding a lagged value of that dependent variable to the right-hand side. Such relationships, usually called short-run demand-for-money functions, are obviously compatible with the behaviour of agents who start out with a certain level of money holdings and then adjust them slowly towards a new equilibrium, through transactions with the banking system, when factors affecting their demand for money vary.¹²

Though a passive-money system can generate the stylized facts captured by the typical empirical short-run demand-for-money function, these can also occur in an environment characterized by completely exogenous nominal money. They can also arise in a world where money is largely made up of the liability side of the banking system's balance sheet but in which, once created, it stays in circulation for awhile and affects expenditure.¹³ What differ among these cases are the sources of the time lags in the relationship: with passive money, these are solely individual portfolio-adjustment costs; with "helicopter money" they

include factors that create money-wage and price stickiness in the economy; in the awkward intermediate case, they also involve parameters characterizing the likelihood of excess money falling into the hands of agents who prefer to transact with the banking system, rather than with some other member of the non-bank public. Empirical evidence is thus equally compatible with purely passive, purely active, and bidirectional interpretations of the interaction between money and the economy.

Vector-error-correction (VEC) modelling permits the estimation of the parameters of what is usually interpreted as the long-run, demand-for-money function, while explicitly maintaining a theoretically agnostic position on the short-run adjustment processes, also known as *error-correction mechanisms*, that cause actual observations to fluctuate around it. The empirical characteristics of the latter may then be studied separately. An appropriate dependent variable for a long-run, demand-for-money function is the stock of *real* money balances—the amount of nominal money in circulation deflated by the price level. VEC modelling permits the out-of-steady-state behaviour of real balances to be decomposed into these two components. If *nominal* money is completely *exogenous*, then the out-of-equilibrium dynamics of *real balances*, as they return towards their steady state after a disturbance, must be dominated by fluctuations in the price level. If *nominal* money is *passively endogenous*, those same dynamics will be dominated by fluctuations in *nominal balances*. In an intermediate case, the process of adjustment will be shared between the variables.

*Fluctuations in the money supply
lead those in output and prices.*

11. The most thorough body of empirical work on the influence of institutional change on velocity is due to Michael Bordo and Lars Jonung. See, for example, Bordo and Jonung (1990) where references to their earlier publications on the topic can also be found.

12. The coexistence of this evidence on the demand-for-money function with equally strong evidence that money is a leading indicator of output and prices (to be discussed below) has sometimes caused perplexity. A 1990 Bank of Canada conference was devoted to this question. Papers by Allan Crawford (1992) and Allan Gregory, Gregor Smith, and Tony Wirjanto (1992), as well as comments by Douglas Purvis (1992), Pierre Duguay (1992), and Peter Howitt (1992) directly addressed the issues. The present article carries on the discussion, largely along lines explored by Howitt.

13. I have discussed these matters in Laidler (1990, chs. 2 and 5), where an extensive set of references to earlier contributions can be found. See also Davidson and Ireland (1990) and Laidler and Robson (1995).

Hendry (1995) has shown that this last possibility seems to be the one that best explains Canadian data. This result implies first, that a fraction of non-bank agents large enough to matter attempts to eliminate discrepancies between desired and actual holdings of money by transacting with other non-bank agents; second, that these efforts affect the price level; third, that observed changes in the quantity of real money in circulation are, partly, the result of money playing an

active role in the transmission mechanism; and finally, that there is a non-trivial, passive element in the behaviour of nominal money. This interpretation is consistent with a broader body of work on the indicator properties of money, which has systematically mined Canadian time-series data on various measures of money and on such key macro variables as output and inflation in a search for reliable lead-lag relationships among them. It has found that fluctuations in the money supply lead those in output and prices. Furthermore, these leading-indicator properties remain even when account is taken of the influence of interest rate changes on output and prices.¹⁴

Some Empirical Irregularities: Measuring the Money Supply and Institutional Change

When we characterize the economy we inhabit as a market system, we apply the qualifier in a way that differs from its conventional usage in economic theory. Within the theorist's "market," prices that create, and then maintain, equality between the supply and demand for all goods and services are costlessly set and maintained, and trade takes place by a process of continuous and frictionless multilateral barter. This abstraction is indispensable for many purposes, but dealing with monetary questions is not one of them. In the real world, agents typically sell the goods and services they supply at times and places different from those at which they buy what they demand, and they usually bridge the gap between the two sets of transactions by accepting, holding, and in due course, paying out some commonly acceptable intermediate item. That item is money in its means of exchange role. Since it is convenient to have the prices of goods and services stated in terms of the item they are usually exchanged for, money usually serves as the economy's unit of account too. An item must be at least minimally durable if it is to be used as a means of exchange, and so it can also serve as a store of value. But many items that are not means of exchange can

14. Here I refer to work by Marcel Kasumovich (1996) who built upon Henry's (1995) work. Fung and Kasumovich (1998) show that the active- money interpretation of the evidence implicit here also seems to apply to data drawn from other G-7 countries. The finding that money has leading-indicator properties even when allowance is made for the information contained in interest rates is particularly compelling, because, as Freedman (1992, 548-49) has argued, passive money could lead output and price-level data were agents to adapt their holdings of money to expectations of the future response of those variables to earlier interest rate changes.

also be so used, and the ability to serve this purpose is not a uniquely defining characteristic of money.

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These considerations suggest that serving as a means of exchange should dominate the criteria used in choosing what to include in an empirical measure of money. However, the very fact that some monetary economists use the phrase transactions money to specify the real-world aggregate to which they attach primary importance warns us that this guideline is not altogether straightforward.¹⁵ It has, in fact, become routine to talk, not of a unique quantity of money, but of a number of "monetary aggregates," and to let empirical results help decide which one is best suited to which purpose.¹⁶ For Canada, the following generalizations seem to hold. First, stable demand functions exist for a variety of aggregates, and the rather narrowly defined M1 has also proved usable in studies using VEC techniques. Second, indicators based on M1 do particularly well with respect to subsequent fluctuations in real variables and, at a longer horizon, provide useful information about inflation too. Indicators based on broader aggregates that include assets which, though not themselves a means of exchange, are readily converted, seem to be more useful with respect to inflation, albeit with a shorter lead time, than those based on M1.¹⁷ Third, and crucially, all of these relationships, including those involving M1,

15. Like the "active/passive" terminology, the phrase "transactions money" also seems to have its origins in Bank of Canada discussions. Note that, rather than referring to a quantity of money held by agents for use in transactions, it denotes a quantity supplied by the banking system that is usable in such a way.

16. The fullest account of the case for ultimately letting the data choose the empirical definition of money is still that of Friedman and Schwartz (1970). Note, however, that this approach is open to the danger of circular reasoning, whereby the aggregate with the most stable demand function is chosen and then used to demonstrate the stability of the demand-for-money function. See Mason (1976).

17. For a succinct summary of recent results on the leading-indicator aspects of various monetary aggregates, see Atta-Mensah (1995), particularly Section 3.

have from time to time shifted or broken down altogether for significant periods.

Like any other, the Canadian financial system evolves continuously, and the nature of the assets it offers to the public, as well as the terms on which they are offered, also changes. For example, beginning around 1979, newly developed computer technology enabled the chartered banks to calculate and pay daily interest on balances held in chequable notice accounts, while ongoing inflation ensured that the rate at which such interest was paid made those accounts extremely attractive relative to traditional non-interest-bearing demand deposits. Demand deposits were included in M1, but chequable notice deposits were not, and so, inevitably, the demand function for M1 shifted as agents moved funds from the former to the latter.¹⁸ In the late 1990s, the demand for M1 seems to be undergoing another disturbance, this time related to the recent phasing out of reserve requirements. These were differentially high against demand deposits (included in M1), giving the chartered banks an incentive to work with their customers to minimize holdings of them. Now, banks have begun to pay interest on demand deposits, which were once non-interest-bearing accounts, and business customers seem to be shifting an increasing fraction of their liquid assets into these accounts. Recent double-digit growth of M1 is, to a probably significant degree, the result of these developments.

Broad aggregates are relatively less prone to such demand shifts, because reallocations across the margins between transactions money and other liquid assets in response to institutional changes are hidden within them. But these aggregates have difficulties of their own. Passbook savings accounts, for example, are readily convertible into chequable deposits, but they are also used as savings instruments by a significant fraction of holders. They are, therefore, close substitutes for chequable notice deposits, on one margin, and for Guaranteed Investment Certificates and Canada Savings Bonds, on another. Thus, an aggregate that includes chequable notice deposits but excludes passbook savings accounts draws an arbitrary line in one place, while one that includes the latter but

18. Small wonder that M1 growth targeting was formally given up in 1982. On this episode, see Freedman (1983). It has subsequently become apparent that the addition of a shift dummy variable for the years 1980–82 seems to be enough to render the Canadian demand-for-M1 function stable, by conventional standards, from the mid-1950s until the mid-1990s. See Hendry (1995) for a recent investigation of the demand for M1 over the 1956–93 period.

excludes GICs and CSBs draws an equally arbitrary line in another.

As the array of products that the financial services industry offers the public changes over time, new problems of this sort will continue to arise.¹⁹ The uncomfortably wide gap between simple economic models and the sophisticated Canadian financial system, which provides a broad and changing array of instruments (some of which more obviously play a means of exchange role than others), is unlikely ever to be bridged permanently. The best that can be done is to monitor the effects of institutional change on the relationship between monetary theory and the monetary system to which that theory is being applied and to adjust the application to whatever new information this monitoring provides.

The Monetary Policy Framework

The Bank of Canada's policy instrument is the overnight interest rate, and the key monetary variable in the explicit model, QPM, which provides the formal element in the Bank's policy framework, is not any monetary aggregate but the yield spread between 90-day commercial paper and 10-year government bonds. Current actions vis-à-vis the overnight rate have to be geared to a projection of the inflation rate six to eight quarters into the future, and as time passes, policy must be adapted to changes in that projection. Thus, the structure of QPM must bridge an uncomfortably wide gap, whether measured in terms of steps along a causative chain or in terms of the simple passage of time, between changes in the Bank's instrument and its effects on the inflation rate. The intellectual discomfort that this must generate could be eased by monitoring and responding to some observable intermediate target variable, which policy actions affect earlier than inflation, but to which inflation's own subsequent behaviour seems to respond systematically.

Though the variable is not explicitly included in QPM, money has causative significance in the monetary policy transmission mechanism according to the "active-money" analysis deployed earlier in this article, and its behaviour is subject to systematic influence by the

19. Boessenkool et al. (1997) seems to have been the first published study to draw attention to, and attempt to make allowances for, this recent shift in the demand for M1. Atta-Mensah and Nott (1999) provide an extensive discussion of recent developments in Canadian monetary aggregates in the light of institutional change. The foregoing discussion owes a great deal to conversations with Kim McPhail and Loretta Nott.

central bank.²⁰ Also, and crucially, this analysis seems to match some key features of the Canadian economy. The difference between the quantity in circulation of some rather narrow transactions-oriented aggregate and its steady-state demand—let us call it a money gap—is the key variable here, and two considerations weigh in favour of making it the basis of an intermediate policy target, or at least an important indicator.

First, not only does the quantity of transactions money lie rather close to what the Bank of Canada actually does along that causative chain known as the transmission mechanism of monetary policy, but also, and potentially very importantly, it helps to transmit the effects, and hence warn of the occurrence, of impulses that originate on the real side of the economy and which monetary policy ought to offset. Even though, in Canada, transactions money is observed on only a monthly basis and with a lag of three weeks or so, and even though these monthly observations are extremely “noisy,” so that only their trend over one or two quarters can be expected to reveal information about the appropriateness of the recent stance of policy, that is still probably early enough to prompt useful action if policy appears to have strayed off track.²¹

Second, such use of a transactions money aggregate would enhance the Bank of Canada’s ability to communicate its intentions about the future stance of policy. Inflation targets are now fairly credible, but the long lag between what the Bank does to the overnight rate now, and its ultimate effect on inflation, inevitably leaves private agents—particularly those in financial markets—eager for further insight into what might happen to market interest rates and the exchange rate in the interim. Experience has shown that for the Bank to speculate publicly about the likely evolution of these variables, or its monetary conditions index (which is a weighted average of the com-

mercial paper rate and the exchange rate) even when the risks to which such speculations are subject is explicitly noted, invites misinterpretation. Regular statements from the Bank about what would constitute desirable behaviour on the part of one or more monetary aggregates over the next year, say, could be a useful input into the attempts of private sector agents to forecast interest rates and the exchange rate. This would also involve less risk of the Bank appearing to inadvertently tip its hand about its future intentions for the interest rates under its direct control than any statements concerned with “monetary conditions.”

Certain objections to basing an intermediate policy target on a transactions-money aggregate must, nevertheless, be taken seriously—not least that even year-on-year variations in M1 do not betray any simple, stable correlation with year-on-year fluctuations in the price level.²² It is important to distinguish between two factors at work here that are often confused with one another. The first is the occasional proclivity of M1 growth to give misleading information about output and inflation. Anomalies here stem from the fact that this particular indicator, by its very nature, makes no allowance for the pronounced increase in the demand for M1 that occurs at times when nominal interest rates fall significantly—for example as the result of a decline in actual and expected inflation. There is nothing surprising about this effect, and it does not undermine the usefulness of monetary aggregates in the policy process.²³ The second factor, the propensity of the demand function for M1 to shift in response to institutional change, raises more serious issues. Such shifts are not usually predictable, and even though they are readily observable while they are occurring, it is sometimes hard to know when they are coming to an end. Their occurrence suggests that it would be unwise for the Bank of Canada to rely exclusively on a

20. QPM’s authors suggest that money’s “seemingly curious” absence is “more apparent than real,” because, within the model, “. . . it is straightforward . . . to close the circle with respect to money growth . . . by specifying a link between inflation and money growth and between the price level and the money stock using a money-demand function . . . but nothing would be added except an endogenous determination of monetary magnitudes. At this level of discussion, “money is there; staff simply do not pay any explicit attention to it . . .” when they use QPM in policy exercises. The money whose absence from QPM is “more apparent than real,” is thus passively endogenous.” See Coletti, Hunt, Rose, and Tetlow (1996, 123).

21. Racette and Raynauld (1991) whose arguments are in many respects similar to those presented here, prefer a broad monetary aggregate. Given that broader aggregates are better leading indicators of inflation, there is something to be said for this position. However, the extra information that they yield is available later than that contained in narrower measures of money, and this reduces their usefulness as early-warning devices.

22. Mishkin and Estrella (1998), discussing U.S. and German data, argue that the lack of simple, stable correlations of this sort disqualifies monetary aggregates as useful intermediate target variables. As will be apparent from the discussion that follows, I believe that this conclusion is overstated.

23. This effect is sometimes characterized as the consequence of “re-entry” from high to low inflation. In Canada, it was important in 1983–84, when M1 growth well into double digits was accompanied by neither an over-exuberant real expansion, nor a resurgence of inflation, and again in the 1990s. Its relevance has been recognized in Canadian discussions from the late 1970s onwards. See, for example, Freedman and Scotland (1978), and Laidler and Robson (1991). Its analytic basis is not a new discovery, having been discussed in the interwar literature on the Weimar Republic’s hyperinflation, as Laidler and Stadler (1998) have shown, and rigorously developed by Phillip Cagan (1956).

single policy framework, based on a particular monetary aggregate, to the exclusion of all else, because there will be times when it becomes, and will be known to have become, unreliable. But that is no argument against paying more careful attention to such a framework than is currently the case.

It would be unwise for the Bank of Canada to rely exclusively on a single policy framework, based on a particular monetary aggregate, to the exclusion of all else

For a monetary aggregate to be a useful basis for an intermediate target variable, it is not enough for it to affect aggregate demand systematically: it also has to be controllable.²⁴ Here again, it is important not to be misled by an at-first-sight unpromising history. M1 growth was indeed hard to control in the late 1970s, but the control mechanism used at that time was derived from analysis that embedded a short-run demand function in a passive-money view of the world. It was, if the arguments presented in this paper are valid, flawed in ignoring the role of credit markets in the money-supply process.²⁵ But that being said, there is a surprising dearth of work exploring the credit-market processes that link the evolution of the money supply to variations in the interest rate variable actually under the Bank of Canada's direct control, and that could be used in the implementation of a regime that uses a formal intermediate target based on transactions money.

24. Charleen Adam has provided helpful discussion of the role of controllability as a factor affecting the potential of a monetary aggregate to serve as an intermediate target variable. It should also be noted that White paid particular attention to this issue in his contribution to Courchene et al. (1979, 601-2).

25. For a contemporary critique of the role of the passive-money view in the money-growth-targeting regime along these lines, see Howitt and Laidler (1979). See also footnote 4, above.

Until we have a better grasp of the complex interrelationships among the overnight rate, the level and structure of market interest rates, the volume of bank lending, and money growth, it will be difficult to make a complete case for basing any fully fledged intermediate policy target on a monetary aggregate. The case for treating such a variable less formally remains. It could be a useful leading indicator of the likely effects of past policy actions, not to mention the effects of non-policy-induced shocks, and thus suggest how the stance of policy ought to be modified.

Concluding Comments

This paper's first, and more general, message is that the interaction of the supply and demand for money is crucial, not only to the impact of monetary policy, but also to the way in which a number of other shocks impinge upon the economy. Instability in the demand-for-money function does not alter the importance of this interaction. It simply makes it more difficult to apply our understanding of it to the design of monetary policy. The second message is that, when it comes to monetary policy designed to achieve an inflation goal, it would be appropriate and helpful to move towards using one or more transactions-money aggregates as the basis of an intermediate target variable.

Note, however, the phrase "move towards using." Currently, we do not know enough about how to control any monetary aggregate to justify its immediate promotion to the status of a formal intermediate target. Note also the phrase "one or more transactions-money aggregates." There have been, and presumably will again be, times when any particular monetary aggregate, such as M1, will be hard to read. It would be foolish not to keep track of a number of aggregates in order to help out when this happens, as the Bank is now doing with its new measures of transactions money, M1+ and M1++ (Atta-Mensah and Nott 1999). It would also be foolish to ignore other indicators, such as the yield spread, that play a key role in QPM. What is being proposed here, is the promotion of monetary aggregates, particularly those pertaining to transactions money, in the hierarchy of policy variables, not the displacement of other variables by them.

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