

THE MONETARY TRANSMISSION MECHANISM

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INTRODUCTION

Several articles have recently questioned the "money view" of the monetary transmission mechanism and have offered an alternative "credit view". This article argues that the money view has been incompletely presented in much of the literature and in almost all textbooks on Macroeconomics and Money and Banking. A distinction between the two views is unnecessary if one presents the money view correctly. Bernanke [1995, 129] does concede that the terminology of "money view" versus "credit view" has created confusion and should be abandoned.

We are concerned with the debate on how changes in the money supply affect nominal income, setting aside the question of how changes in nominal income are split between changes in prices and changes in output. We also do not address the question of reverse causation central to the real business cycle theory of the New Classical Macroeconomists. A change in the money supply can affect aggregate demand and income both *directly* and *indirectly* through what we shall call the "cash-balance effect", which has other aspects than the wealth aspect that Patinkin [1965] emphasizes in discussing his "real-balance effect". In what follows we assume three types of goods: (1) money; (2) newly produced commodities, interpreted to include services; and (3) nonmoney assets, physical as well as financial. In the *direct* channel of the cash-balance effect, people and firms try to restore what they consider deficient money holdings by straightaway decreasing their demand for commodities (and perhaps increasing supply).¹ The *indirect* channel operates when people and firms try to restore their deficient money holdings by selling assets, thereby raising interest rates and lowering asset prices, and when people and firms decrease their demand for commodities in response to the increased interest rates (rather than directly in response to the perceived deficiency of cash balances). Mishkin [1995, 3-10] surveys the main types of monetary transmission mechanisms found in the literature; none of them portrays changes in the money supply as directly affecting aggregate demand and income. Similarly, the Federal Reserve Bank of St. Louis *Review* of May/June 1995, devoted entirely to the channels of monetary policy, recognizes only the indirect working of monetary changes.

"MONEY VIEW" VS. "CREDIT VIEW" OF THE TRANSMISSION MECHANISM

Bernanke [1983; 1988; 1993; and Bernanke and Blinder 1988] is one of the leading proponents of the "credit view" of the monetary transmission mechanism. He presents [1993, 55] the conventional "money view":

- 1) The Federal Reserve sells bonds, reducing banks' reserves.
- 2) Banks decrease the money supply.
- 3) The deficiency of money raises interest rates.
- 4) Higher interest rates decrease aggregate demand.

Bernanke finds the money view, as he understands it, too weak to account for the large effects of monetary policy on spending sometimes observed [1993, 55]. Bernanke and Gertler [1995], Cecchetti [1995], and Hubbard [1995] make clear that the alternative credit view actually consists of two possible channels: "bank lending" and "balance sheet".

In the bank-lending channel:

- 1) The Federal Reserve sells bonds, reducing banks' reserves.
- 2) Banks decrease the supply of loans to firms.
- 3) Bank-dependent firms curtail planned spending.

In the balance-sheet channel, borrowers have better information than lenders, who charge a premium to compensate for their having inferior information. The "external finance premium" is the difference in cost between firms' external and internal financing and varies inversely with their net worth. In this channel:

- 1) The Federal Reserve sells bonds, resulting in monetary contraction and higher interest rates.
- 2) Higher rates reduce firms' net worth in two ways. First, they are usually associated with declining asset prices and thus the value of firms' collateral. Second, they reduce net cash flows by increasing interest expenses.
- 3) Lower net worth raises firms' external finance premium, making it more difficult for them to obtain external financing.
- 4) Firms cut back on spending.

A MONETARIST VIEW OF THE TRANSMISSION MECHANISM

Bernanke's points may well be correct, but they do not mean that the quantity of money is unimportant. A complete presentation of a money view of the transmission mechanism would recognize that a change in the money stock may affect income through other aspects of the cash-balance effect than the one Patinkin [1965] emphasizes.

Patinkin construes the real-balance effect, as he calls it, almost entirely as a wealth effect: real money balances form part of their holders' wealth; and a decrease in them, other things being equal, makes their holders less eager to buy commodities. (This is true, anyway, of so-called outside money, money *not* matched by private debt; prime examples are commodity money and government fiat money. Inside money has less claim to being counted as part of private-sector net wealth, since it is matched by private debt; the prime example is bank notes and deposits created in connection with loans to private borrowers.)²

Patinkin does not describe two other aspects of the cash-balance effect—not explicitly, anyway. A second aspect might be called the Cambridge effect, referring to "Cambridge *k*", the inverse of velocity. The idea, though not the name, comes from Sir Dennis Robertson [1963, 443-44].³ People hold money largely for transactions purposes and are concerned with the size of their cash balances relative to income and expenditure. A decrease in the relative size of these balances, whether through a decrease in the nominal quantity of money or a rise in the prices at which income and expenditure flows are evaluated (or through a rise in real economic activity) could make people feel that they were holding too little money and so make them less willing to buy commodities.

A third aspect, the portfolio-balance effect, hinges on people's concern for the *composition* of their asset holdings (both money and nonmoney).⁴ An individual holder of assets aims at a portfolio composed in such a way that, with qualifications for risk, lumpiness, and so forth, he receives the same estimated yield on all assets at the margin. Henceforth, MER stands for an asset's marginal expected rate of return. If an asset holder perceived that he was not receiving equal MERs, he would sell assets with relatively low MERs and switch into ones affording higher yields.

Money, other financial assets, and to some extent physical assets are means of allocating consumption over time, so time preferences enter into portfolio decisions. Suppose the individual had arranged his current consumption and command over future consumption so that he was indifferent at the margin between 100 real units of consumption now and 105 units a year from now. In this situation he is said to have an internal rate of discount (IRD) of 5 percent. Suppose further that an MER of 10 percent were available on portfolio assets. The discrepancy would give him reason to stint on current consumption and build up his portfolio. As current consumption accordingly became scarcer and future consumption more abundant, he would discount future consumption more heavily than before; he would move into being indifferent at the margin between 100 current consumption units and 109 future units. If the same adjustments brought the estimated marginal rate of return on his portfolio down to 9 percent, then he would have achieved a portfolio of optimum size: the IRD would equal the common MER on assets. (These illustrative figures are chosen to suggest that in principle the individual has some influence, if only slight, on the yields obtainable on portfolio assets. He would hardly have an appreciable influence on such cut-and-dried rates of return as bond yields, but the principle of diminishing marginal returns would operate on the subjectively estimated intangible returns on holdings of real cash balances and physical assets. Strictly speaking, in our example the MER would be fixed by interest rates on markets in which the individual is a price-taker; only the IRD would adjust.)

Let us generalize from the example. If the holder has an IRD lower than the MER, he has reason to hold more assets, which means shifting some consumption from the present to the future. Conversely, if he is receiving an MER that falls short of his IRD, he has reason to pare down his portfolio. A portfolio is optimal in size as well as in composition if the marginal expected rate of return afforded in common by the assets composing it is equal to the holder's internal rate of discount.

The principle of equating marginal expected yields helps explain why the quantity of money demanded—and so the velocity of money—is not an objectively determined magnitude. It depends, rather, on circumstances and people's assessments of them, including rates of return obtainable on other assets. People tend to hold real cash balances of such size that their subjectively appraised marginal yields are roughly equal to alternative rates of return. The higher explicit interest rates are, the higher is the target and equilibrium level of marginal yield on cash balances. The smaller, then, in accordance with the principle of diminishing marginal yield, must those balances be.

Suppose people start with portfolios they consider satisfactory and then experience a decrease in money's *share* in these portfolios, whether through a decrease in the nominal quantity of money or a general rise of prices. People find that their portfolios contain relatively too little money. In accordance with the principle of diminishing marginal yield, the MER on money is above the MER on nonmoney assets and above the IRD. They then set about trying to replenish some of their cash balances by buying fewer commodities. The operation of this portfolio-balance effect (like the Cambridge effect, if not the wealth effect) does not seem to hinge on whether the money is outside or inside money.

It is necessary to differentiate our portfolio-balance effect, whereby changes in the money supply can *directly* affect spending and income, from the portfolio-balance models prevalent in the literature. Almost all these models portray a change in the money supply as affecting spending and income only *indirectly*, through changes in interest rates and asset prices, including the prices of physical assets relative to the prices of newly produced durable commodities. In his survey of the transmission mechanism, Mishkin [1995, 4-7] refers to "The Interest Rate Channel" and "Other Asset Price Effects". Trescott [1989] contrasts the portfolio-balance model as it typically appears in the literature with a model in which changes in the money supply can directly affect the demand for commodities.⁵

The three aspects of the cash-balance effect we have considered—each operating through the direct and indirect channels mentioned earlier—are not distinct, separate components of that effect. They are, as we said, *aspects*, meaning views or slants on how real cash balances affect the demand for commodities. Analogously, we view a statue from several different angles, obtaining a better appreciation of it than from one angle only. But the views overlap; and they are views of a single reality, the whole statue.

The cash-balance effect pertains to interaction of the demand for money with the actual quantity.⁶ Just as individuals try to adjust their cash balances in light of their stocks of other assets and the prices, incomes, and interest rates confronting them, so

their efforts to make these adjustments in the face of a given nominal money supply affect the intensities of demands and supplies in various markets and so the prices, incomes, and interest rates that result. The cash-balance effect also affects investment through the direct channel as firms respond to their deficient money holdings [Miller and Orr 1966], although the usual presentation of the real-balance effect focuses narrowly on consumption. After a monetary contraction, for example, the increased MER on money held by firms makes the MER on factories and machinery look relatively less attractive and therefore depresses investment.

Bernanke [1983] provides a useful insight: during the Great Depression financial intermediation was greatly impaired, with severe real effects on the economy. Well, the monetarist view also recognizes that monetary disorder operates through several channels, including interference with the channels of financial intermediation. The cash-balance effect, in our broadened conception of it, played the major role in these financial crises. Indeed, Brunner and Meltzer [1988, 448-49] argue that the financial crises were endogenous events, "conditional on the monetary propagation mechanism."

A complete presentation of a money view would recognize that both the direct and indirect channels of the cash-balance effect operate regardless of whether the counterpart of money-supply contraction on the banks' balance sheets is a smaller volume of business and consumer loans or reduced holdings of government securities. We do not deny that the details and the intensity of the effect are influenced by the balance-sheet counterparts of the monetary contraction. Under our current system, the initial impact of a tightening of Federal Reserve policy may very well fall largely on bank-credit-dependent activities. This follows from our particular institutional structure. But it is illegitimate to downplay the importance of the quantity of money by a narrow focus on impact effects.

A MONETARIST VIEW OF A "CREDIT CRUNCH"

The Gurley-and-Shaw literature illuminates how extensions and improvements in financial intermediation favor real economic development. Conversely, reverse changes in financial intermediation, perhaps reflecting heightened caution on the part of banks, can impair economic activity. This initial disruption would be in the nature of a nonmonetary or real disturbance; therefore, problems in credit markets might operate on the supply side of the market for commodities by limiting the economy's productive capacity.

But could a "credit crunch" operate on aggregate demand? The equation of exchange, $MV=PQ$, helps answer this question. If M remains unchanged, as we do suppose to distinguish between a credit shock and a money shock, then any decline in aggregate nominal demand, MV , presupposes a decline in V . The quantity of money demanded relative to income and expenditure rises, perhaps because worsened conditions have made people more cautious and liquidity-minded. Or the rise in the relative demand for money might trace to a reduced opportunity cost of holding it; perhaps the bond interest rate has fallen as banks bought bonds instead of making

loans. Anyway, a deficiency of demand for current output must realistically be associated with an excess demand for money.⁷

CONCLUSION

Bernanke correctly argues that monetary policy can affect aggregate spending without necessarily first changing the interest rate; however his rationale [1988, 9] is that aggregate spending depends on loan-market conditions. On the other hand, monetarists emphasize the importance of the overall stock of money in relation to demand for it. An excess demand for money affects income not only indirectly through changes in interest rates and prices of nonmoney assets but also directly by decreasing the demand for commodities.

A burgeoning literature has attempted to empirically determine the importance of the bank-lending channel. Reviewing this literature, Thornton [1994, 48] finds the revived interest in that channel ironic at a time when financial innovation and deregulation should have eroded its strength.

NOTES

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1. The direct channel of the monetary transmission mechanism was understood by Wicksell [1898/1965, 39-41], who provided one of the clearest early statements of the connection between an excess demand for or supply of money and changes in the demands for and supplies of commodities. Trescott [1989] argues that the direct channel is "quite traditional", having appeared numerous times in the literature.
2. The distinction between outside and inside money was introduced by Gurley and Shaw [1960 and articles preceding that book]. Johnson [1969, 35] argued that the relevant distinction is between non-interest-bearing and competitive-interest-bearing money. Sweeney [1988] supports this view and elaborates on it.
3. Humphrey [1994, 71] argues that John Wheatley [1807; 1819], an overlooked classical monetary theorist, also had the idea of the Cambridge effect, although neither uses that name. Wheatley believed that monetary shocks affect only monetary variables [Humphrey, 1994, 70].
4. Our portfolio-balance effect is based on Zecher [1972]. In Section II Zecher spells out the conditions for equilibrium: $MER = IRD$. While he does hint at the portfolio-balance effect operating through the direct channel, he clearly emphasizes its operation through the indirect channel in Section V, which deals with how money affects expenditures and unemployment.
5. The concepts of portfolio equilibrium and diminishing marginal yield further discredit the Keynesian notion of a liquidity trap, which supposes that the subjectively appraised marginal yield on cash balances cannot be depressed below a certain level.
6. In passages departing from his usual narrow (wealth-effect-only) conception, Patinkin [1965, 18, 83] calls the real-balance effect the inverse of the familiar demand for money. Moreover, on pages 294 and 298 he appears to recognize a portfolio-balance effect that operates only *indirectly*, by creating an imbalance in the money market matched by one in the bond market. Sweeney [1988], Jonson [1976], and Zincone [1967; 1968], like us, have a much broader conception of a real-balance effect than Patinkin.
7. Yeager [1956; 1968; 1986] develops this argument.

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