

Credit Aggregates: Some Suggestions

Professor Vaciago's "A Note on Credit Aggregates as Targets or Indicators of Monetary Policy" in the June 1985 issue of this *Review* summarizes recent work by a number of authors, draws some conclusions, and briefly tests those conclusions against U.S. experience between 1982 and 1984. The purpose of this note is to draw attention to some aspects of the matter that seem to have escaped notice in the material he has examined, and to suggest some areas in which Vaciago and others might wish to extend their analyses. For further information on the logic behind these suggestions the reader is referred to *The Principles of Financial Intermediation*.¹

A major element in my approach to the subject originated in an article by Rutledge Vining (1940), in which he linked the already-traditional explanation of the multiple expansion and contraction of bank credit with the then-very-new idea of the multiple expansion and contraction of income, consumption, investment, savings, and employment. Ever since I first encountered it, this linkage has been a central part of my own understanding of the working of the economy.² It explained a matter that had puzzled me from my first introduction to economics: money is obviously important in a money-and-market economy, but the traditional account of the expansion of money and credit seemed to operate in a little world of its own, with no visible connection to "real" economics except for the rather mystical operation of the quantity theory of money and prices. A new puzzlement then replaced the old one in my mind: why didn't this link get more extensive use in economic literature?

¹ ALEX N. MCLEOD, *The Principles of Financial Intermediation*. Lanham MD, New York, London; University Press of America, 1984.

² So much did it become part of my thinking that for a while I even forgot its source! A friend saw a draft of an article of mine that had been accepted for publication (1962), and tactfully remarked that it reminded him of Vining's 1940 article. That led to a footnote that acknowledged Vining's work, but failed to acknowledge my debt to it; the full recollection of that debt came only on subsequent reflection.

Vining uses an algebraic presentation in a successive-time-period analysis. Stripped to its essentials, however, it can be represented by two instantaneous multipliers, which can be combined into a third or composite instantaneous multiplier. Assuming a reserve ratio of 0.1, no currency drain, and a closed economy, a primary deposit of \$ 1,000 will generate total deposits of \$ 10,000 and loans of \$ 9,000, which will just absorb the primary deposit as an increment of required reserves — a deposit multiplier of 10, a credit multiplier of 9. Assuming that the money borrowed is borrowed to be spent and not merely to be held as liquid assets, each dollar borrowed becomes the multiplicand for a Keynesian income-multiplier. A marginal propensity to consume of 0.9 thus gives an income multiplier of 10 to apply against the \$ 9,000 of loans, or a combined credit-and-income multiplier of 90 to apply against the initial primary deposit.³ I have used adaptations of this approach in work stretching back more than 25 years (McLeod, 1959, 1962, 1964, 1984).

One criticism that has commonly been levelled at sequence analyses like Vining's is that their completion implies the passage of an indefinitely-long period of time. An early defence was to calculate a timeframe in which the process would be half completed, rather like the half-life of a radio-active substance, but even this involved some rather heroic assumptions about the lengths of the various timeperiods on which the sequence was based. However, it appears that in an open-economy model there will be an initial tendency for the credit-expansion to be overdone and the income-expansion to lag behind, which in due course will accentuate the external drain and cause a partial reversal of the initial expansion. This implies that in the real world a financial-expansion sequence may reach an approximation to its theoretical limit fairly quickly.

Note that for present purposes it is usually convenient to use the "spending" version of the income-multiplier mechanism, not the "investment" version. That is, direct investment of income in physical assets is treated the same as consumption, and saving is identified with the accumulation of financial assets.

³ This is a pretty impressive multiplier, but it is faithful to Vining's arithmetic example. In an open-economy model, however, even relatively low bank-reserve and marginal-propensity-to-save ratios bring far less dramatic combined multipliers, provided policy constraints keep exchange rates within reasonable bounds.

Problem Areas

Vaciago cites work by B.M. Friedman and others, emphasizing the stability of the ratio of domestic debt to GNP (the debt-income ratio). He reports that Friedman used "total domestic non-financial sector debt" for credit-to-income relationships, and concluded that it gave better results than money-to-income relationships using any of the alternative monetary aggregates. He (Friedman) therefore argued that total credit was a superior target to traditional monetary aggregates, or at least a companion target.

From a number of papers exploring the *pros* and *cons* of the proposed credit target, Vaciago lists the main criticisms as follows:

- 1) There are no theoretical foundations for the relationship.
- 2) Past correlations might not hold if the central bank shifted from controlling monetary aggregates to controlling total credit.
- 3) The behaviour of total credit almost entirely reflects income; it seems to be more effect than cause.
- 4) The central bank's direct control of credit is little better than its direct control of GNP itself.

As to whether credit aggregates are the right *target* for monetary policy, not merely useful indicators, Vaciago offers four objections. First, if the ability of economic units to spend is constrained by credit *availability* (their ability to borrow), as Friedman apparently believes, spending decisions should be related to assured but still-unused lines of credit. Second, not all credit is created for production purposes. Third, how important are credit availability and non-price credit rationing in practice? Fourth, is the theory applicable to a credit aggregate so broad as to include all government and private borrowing?

Stocks, Flows, and Financial Aggregates

The first point to note is that Friedman is comparing *stocks* with *flows* — stocks of credit or "money" with flows of income. This is not necessarily *wrong*, of course, it is just that we have to be careful that it

is appropriate in a given case. It is routinely done in the case of money and income, as is implicit in the use of monetary aggregates as guides to or monitors of monetary policy, so why not in the case of credit and income?

When money is narrowly defined — say, as currency plus chequeable deposits — the expectation that it will bear a stable relationship to money income (or to GNP) is not unreasonable, because its transactions function offers a strong theoretical link to total output. A fixed stock of money could be seen as a sort of catalyst, promoting a given flow of money income without itself being changed in the process. That would make the money supply a reliable guide to monetary policy, as it was unequivocally deemed to be when the quantity theory of money and prices was the last word in monetary theory. For reasons that have been widely discussed and debated for 50 years, however, that turned out to be a false hope. The search for a better guide is what led to the use of broader monetary aggregates, which is where we stand today.

The theoretical case for expecting a monetary aggregate to provide an acceptable policy guide is progressively weakened, however, as we extend the concept to include more and more near-money components, because there is no compelling reason to expect that there will be a fixed relationship between the community's *money income* and the portion of its *wealth* (accumulated savings) it will choose to hold in the form of any given financial claim that has no transactions function. And one of the criticisms that have been levelled against credit aggregates can be levelled with added force against these near-money components: they appear to be more the *result* than the *cause* of the growth of income. It should be no surprise, therefore, to find that none of the many monetary aggregates that have been tested has proven entirely satisfactory — which is obviously the reason for seeking alternative or supplementary policy guides.

Vining's analysis clearly supports the thesis that a credit aggregate would be a better policy guide than a monetary aggregate. However, it would seem that it is the *flow of lending*, not the *stock of debt*, that should be compared with the *flow of income*.

Furthermore, my work has led me to conclude that "lending" in this sense should be interpreted very broadly indeed. It should certainly include government debt issues, for they clearly finance income-generating expenditures. I believe it should also include (for example) the purchase of new issues of equity stock, for exactly the

same reason. An equity issue closely resembles a debt issue in that the purchaser gives the seller command over productive resources; the main difference is in how the risks and rewards inherent in the activities thus financed are to be shared.

Credit, Income, and the Transmission Mechanism

Vining's work brings out very clearly the theoretical framework that links credit to income. It also explains, step by step, the mechanisms by which each affects the other. His simple banks-only closed-economy model can be expanded into a multiple-intermediary open-economy model in which the public allocates its accumulated financial savings among competing asset-types (the obligations of various types of financial intermediary, foreign as well as domestic) (McLeod, 1984).

The first element in the linkage is that the *flow* of loans granted and spent generates a significantly-larger *flow* of income. (Or, if you prefer, an increment of loans generates a multiple increment of income.) The fact that loans may be raised for liquidity purposes rather than to finance additional spending is, in principle at least, easily accommodated: use the *net* increment of loans by all lenders combined as the multiplicand. The proceeds of any loan used to enhance liquidity must be held as a financial asset of some kind, and any further increment of lending thus brought about will have already been counted.

The second element in the linkage is the fact that the savings generated by the income-expansion must be equal to the new lending that initiates the expansion.⁴ Furthermore, all the financial assets created in the credit-expansion process can be identified as a component of the savings generated in the income-expansion process, along with any other financial assets that people decide to put their savings into. In other words, even "created credit" must eventually be *saved out of income*. Among other things, this illuminates how bank credit

⁴ In any multiplier sequence the equilibrating condition is that the total "leakages" must equal the "disturbance" that starts the sequence going: the "leakage" of free reserves into required reserves ends bank-credit expansion, the "leakage" of new spending into savings ends the income expansion.

“created out of thin air” can affect money income and thereby — at one remove — affect real income and other real magnitudes.

Between them these two elements show the general-equilibrium relationships among credit, income, saving, and related magnitudes: it is not a question of one of them “determining” another, but of all of them being mutually determined as part of the equilibrating process. If you wish, however, you can break this down into two partial-equilibrium steps without doing too much violence to the general-equilibrium concept: you can say that the spending of the loans (the credit-expansion) generates the income *and* the income thus generated gives rise to the savings that are the counterpart of the created credit.

Central-Bank Control of the Financial System

To say that the central bank can “control” the financial system is of course to use too forceful a word; “strongly influence” would be a better choice. It can indeed control the amount of its own monetary obligations or “high-powered money”, if it has the will and the independence to do so. When it comes to the structure of financial assets erected on this base, however, and the pattern of interest rates and other asset-yields thereon, it is pretty well true that the central bank *proposes* but the general public *disposes*. These assets and yields, and the interrelationships among them, are determined as part of the same dynamic general-equilibrium structure that links credit, income, and savings; any disturbance to or departure from the desired equilibrium will induce reactions designed to restore it. In this context the central bank may be said to exercise its influence through *managed disequilibrium*. That is to say it is able, by its control over the basic reserve medium of the system, to induce disequilibrium in the ratio of money to other assets (both financial and real) in the portfolio the public would prefer to hold at its current level of money income and wealth, thereby inducing a more-or-less-predictable response.

Nevertheless the central bank *can* be said to “control” a chosen financial variable (*e.g.*, a monetary aggregate or a market interest rate), in the sense that it can take further initiatives if its initial actions do not bring about the result it desires, *provided* it is willing to accept the consequences. Thus, for example, the difficulties the Bank of England

faced in the 1950s and 1960s were *not* due to *inability* to control the cash base of the clearing banks, as the “new orthodoxy” propounded by Dacey, King, and Sayers asserted, they were due to *unwillingness* to do so for fear of unwanted effects on interest rates (McLeod, 1966).

As long as the general public continues to hold an appreciable and relatively-stable portion of its financial assets in the form of banknotes or other obligations of the central bank, the bank can control the total volume of credit in the economy (or the rate at which it is being expanded) at least as well as it can control any given monetary aggregate. This is true regardless of how the public chooses to hold its remaining financial assets — whether as chequeable or non-chequeable deposits at those institutions that are officially recognized as banks in a particular jurisdiction (let us call them commercial banks), as similar deposits at competing institutions (near-banks), as claims against other financial intermediaries, or as direct claims by primary lenders on ultimate borrowers. The only requirement is that the central bank have adequate and timely reports of all forms of credit, or at least of a high percentage of the total.

The technique of control will be simple and straightforward, using only the traditional instruments of monetary policy. The central bank’s actions impinge most immediately on the commercial banks, because of their rôle in administering the payments mechanism; the effects spread inexorably but much more slowly to other intermediaries. In its day-to-day operations, therefore, the central bank will focus on the growth of the required reserves of the commercial banks, guided by its perception of general credit conditions, or the level of interest rates, or its target growth rate for a given monetary aggregate or selection of aggregates, or whatever other guide it deems appropriate, just as it does now. However, its ultimate goal will presumably be to promote that level of money income which will accord with the best compromise official policymakers can achieve between their full-employment and their price-stability goals. If there is a substantial unexpected increase (or decrease) in non-bank credit, signalling that the public is apportioning more (or less) of its savings to other channels, there will be a corresponding change in money income (and therefore in the balance between the employment and the price criteria of policy decisions); the central bank will then have to revise its intermediate policy targets accordingly. In effect, the level of bank credit will be adjusted to meet those needs that are not met from other sources.

Credit Availability

In the discussion of the availability of credit as a constraint on spending, there seems to be some confusion between the *need to borrow now* in order to finance a specific program or project, on the one hand, and the *desire to be able to borrow at some time in the future* if the need arises. The first is, or may be, an immediate constraint on production, the second is merely a matter of prudent contingent planning. This confusion seems to have been a factor in the debate over the respective rôles of money and credit in the early years after World War II, and the assertion that "money doesn't matter". Unused overdraft facilities⁵ are certainly evidence of credit availability. So are unused lines of credit of any kind, and so are liquid assets that a potential borrower might sell or pledge. But they relate to future needs or contingencies, not present needs; the fact they are not utilized is surely *prima facie* evidence that credit constraints are not pressing unduly on the potential borrowers in question.

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⁵ In drafting the law that established the Bank of Guatemala in 1945, and in advising the Guatemalan authorities thereon, Robert Triffin provided that the bank should include unused lines of credit at the commercial banks when computing the money supply. As far as I know it still does. It is the only instance of this practice that I know of, though Triffin may have instituted the same procedure in some or all the other central banks he helped to found. However, his recommendation appears to have been due to a desire to get a definition of money that would give equivalent results in banking systems that did or did not permit overdrafts, not to the availability considerations here at issue.