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MONETARY ANALYSIS AND MONETARY STATISTICS

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Monetary Analysis and Monetary Statistics

Monetary theories are numerous and wide-ranging. As you know, this is a field that has always been particularly attractive to crackpots or so-called monetary cranks, each of whom invariably has discovered a cure for most of the world's ills in his particular monetary scheme. Leaving the crackpots aside, all who advance monetary theories and believe that monetary factors influence output and prices need a better understanding of how the economy uses money.

We may distinguish two general approaches to monetary theory. A monetary analyst may emphasize changes in the stock of money as the prime determinant of changes in aggregate economic activity. This approach leans heavily on some observed statistical association between changes in money supply, or changes in its rate of change, and movements in total output as measured by gross national product.

Another monetary analyst may look to the obverse of deposit money, bank assets, and examine changes in their aggregate and composition. Here the monetary influence is traced directly in the flow of bank credit to consumers, government, and businesses and indirectly in the impact of bank credit expansion on interest rates and other borrowing terms.

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One need not choose between these two general approaches in order to appreciate the importance of a more precise understanding of monetary behavior; that is, of changes in the way in which the existing money supply is used. The "how" and "why" of money use is relevant to both theoretical approaches as changes in velocity can counteract changes in the stock of money or in the availability of credit. It is the variations in velocity that make for a looser linkage than would otherwise exist between credit or money outstanding and total spending.

How can we go about getting at a better understanding of money use and holding? It is my belief that progress in this direction depends upon disaggregation of monetary statistics so that we can focus separately on major economic groups that behave with some degree of homogeneity. We need to get beyond the stage of confining monetary analysis to leading or lagging differences in change or momentum in the aggregate money supply. Clearly, for analytical needs, we should be providing a great deal more data; such data as would enable us to sector money holdings and inflows and outflows according to major economic groups.

Transactions and Liquidity Uses of Money

Monetary theory has conceived of money holdings for two uses, corresponding to the two major functions that money serves: the medium of exchange or transactions use, and the store of value or liquidity use. The first category, the transactions use, involves

holdings of currency and deposits that are necessary to the ready flow of receipts and payments. The transactions balances that individuals and businesses need to hold is closely related to the coincidence in timing of their total receipts and expenditures. The greater the disparities in timing between receipt and expenditure the larger the transaction balance required for any size of flow.

The other category of money use involves balances to accommodate current anticipations of some future need for liquidity. It encompasses the "rainy day" balance and an accumulation of funds for future expenditure or investment. It also reflects more or less unconscious accretions to or dissipations of balances arising from changes in the relationship between income and expenditure. And these balances will mirror uncertainties in the timing of investment whatever the current incentive to turn to interest bearing near-money alternatives.

The distinction between transactions and liquidity balances is not ordinarily apparent by simple observation as neither individuals nor corporations keep these balances in separate accounts. Although this does not invalidate the distinction as a useful analytical construct, it does obscure its application. Further clouding this conceptual approach is the fact that the function served by money held as liquidity balances can also be served quite satisfactorily by other types of financial assets. While money, as usually

defined to include demand deposits and currency, is the unique transactions medium, it is far from unique as a store of liquidity, for that function is also performed by a host of other assets, such as time and savings deposits, savings shares, and short-term securities.

The shifting reliance on money to accommodate liquidity needs is one of the major reasons why velocity is cyclically variable; that is why there is not a rigid relationship between aggregate spending and the money supply, in the short run. In the longer run, institutional practices, changing financial instruments, and technological improvements in processing financial records are operating to economize on the money supply needed for any given level of transactions.

Constancy of velocity would mean that there was a rigid link between the size of money balances the public needed and the amount of total transactions.

The fact is, however, that households and businesses do not have such a rigid mode of behavior in regard to their money balances. They hold money not only to finance recurrent transactions but to provide themselves with liquidity for a variety of reasons. And they are prepared to alter the size of their balances, as a proportion of their receipts and expenditures, in response to a variety of influences. It is the net of all such changes that shows up in the measure of aggregate velocity.

A good deal of monetary analysis has attempted simply to explain changes in aggregate velocity; that is, to account for the relationship of GNP to money supply. Recently this type of analysis has been taking more account of the liquidity changes in the economy and looking to the role of money substitutes and the effect of their availability on the demand for money. This is clearly a step forward but still relies too heavily on aggregative analysis. Simply extending aggregative monetary analysis by, in effect, defining M more and more broadly--until the velocity of the broader M is finally stabilized statistically--tells us very little about economic behavior.

The Need for Sectoring and for Gross Flows

To understand and predict changes in velocity, it is necessary to break down the aggregates and focus on different groups about whose monetary behavior meaningful hypotheses can be advanced and tested. For changes in aggregate velocity or turnover may reflect diverse and even offsetting changes in the rates of turnover of individual sectors and subsectors. To understand and explain variations in velocity dependably, the variations must be related to plausible behavior patterns with regard to money use. For example, business management of cash balances is influenced by factors quite different from those that influence individuals. The motivations upon which high-income individuals act may be quite different from those of lower income individuals and these differences, in turn, can make for different behavior in the holding and use of money.

Similarly, motivation and behavior can well vary by occupational groups and regions of the country. No better illustration comes to my mind than how farmers' balance and expenditure patterns might be obscured by aggregation if the accounts of all types of farmers were merged. On the receipt side alone the weekly check for the dairyman, the once-a-year payment received by the cash grain farmer, and the irregularly timed receipts from live stock sales, each induces its own pattern of seasonal-cyclical money use and holding.

An analogy may help to point up the needs for sectoring and gross flows. To learn about a community's behavior with respect to the use of water, it would not be sufficient to observe changes in the level of water stored in the reservoir. We would also want a measure of flow into or out of the reservoir. Even after we had done this, however, we would not know why the rate of use had varied over time. In order to approach such an understanding--in other words, to formulate a reasonable and dependable theory about water use--we would want to relate the rate of use to at least two other sets of variables: those that determine the demand for a beverage that quenches thirst (personal or industrial), and those that provide an alternative means of meeting this demand. At this point we might well find ourselves disaggregating the water-using population as between industry and families. (While families may find beer a meaningful alternative to water as a thirst-quencher, the availability of beer does not affect industrial use of water. Yet much of our monetary

analysis makes this type of assumption; as, for example, that Treasury bills are not really a significant alternative to money in the asset holdings of consumers.) Beyond this we might well want to look at different groups of families and industries if we felt that they were subject to differing types of influences in their behavior as consumers of water.

As a result of this method of analysis of money use, we would be in a better position to understand which types of money holders have been responsible for both the cyclical and the secular movements in velocity that we have experienced since the end of World War II. Aggregate turnover of money has risen sharply in the postwar period but this rise has been neither steady nor uniform throughout the country. It has been influenced by cyclical swings. An immediate goal should be to disaggregate these secular and cyclical movements and explain them in terms of the monetary behavior of different types of economic groups.

In all probability, some of the cyclical variations in aggregate velocity that we observe may, upon refined analysis, turn out to reflect not changing ratios of expenditure to cash balances for one or several sectors but mainly a cyclical change in the mix of money holdings. For since business turns over balances probably 8-10 times as frequently as individuals, if business expenditures and cash balances fall more in recession than individual expenditures and cash balances, aggregate velocity will decline even though neither individual nor business turnover falls off.

Beyond this, however, we would want to explain the change and momentum in sector velocities that we had succeeded in observing. Such explanations would be in terms of factors that have meaning to each particular sector. For example, dividend rates paid on shares at savings and loan associations may have an influence on how large a cash balance middle-income consumers hold at each level of income. But these dividend rates have little direct effect on corporate cash holdings. We might also find that these dividend rates have relatively little effect on lower income families. It is quite likely in fact that in the consumer sector, the lower the income level, the larger is the proportion of money represented by transactions balances. In other words, a "crude" quantity theory might be valid for consumers below some income level. This would be one of many hypotheses that might be tested if we organized our analysis and statistics-gathering in the ways I am suggesting.

In attempting to measure changes in money use, we ought to explore the possibility that changes in unused or minimum balances would, if inverted, mirror the changes in money use. If this turned out to be the case, substantial economies in compiling the data would be realized. There is the possibility, moreover, that changes in minimum balances might be revealing in their own right.

Additional examples could be cited of types of hypotheses that need testing if we are to make more progress in monetary analysis. In the main, we would be looking for explanations for changes in rate

of use of money balances in terms of variables that affect the desire of major economic groups to hold both transactions and liquidity balances.

Statistical Needs

Now if monetary analysis is to move in the direction I have been indicating, we shall have to make energetic efforts to compile appropriate data. In fact this whole area bristles with problems that the Federal Reserve and the statisticians have left unsolved. Two projects that have recently been completed merit mention. To give the aggregative analyst better raw material, the Federal Reserve now publishes seasonally adjusted biweekly money supply data based on average daily holdings instead of those as of a given date. This technique has eliminated many statistical aberrations in the series but further data and conceptual refinements are needed.

Of more significance analytically are continuing studies of money use that are being carried on at the Federal Reserve Bank of Chicago. That Bank now publishes seasonally adjusted data monthly for several metropolitan areas, showing gross inflows and outflows to savings accounts of individuals and unadjusted flows for time accounts of corporations and for certificates and open book accounts of individuals. These data are supplemented for the largest metropolitan areas with fragmentary comparable data on other near monies held by individuals and with information on

competitive developments. The project is an excellent illustration of the advantages of analytical detail. Elsewhere in the United States a figure on net changes in total commercial bank time accounts is all that is available on a weekly or monthly basis--and there is no sectoring by corporate and personal accounts. Without inflow or outflow rates, no one can tell if balances are rising because of greater inflow or lesser outflow. Nor can one tell without the geographical detail what effect a dominant depressed industry has on near-money flows. At the Chicago Reserve Bank, the sectoring, the inflow and outflow rates, the geographical detail, along with evidence of competitive trends, permit the analyst to say, not only what has happened to net time balances but, in most instances, why.

I should also mention the Federal Reserve quarterly flow of funds accounts. As part of their integrated presentation, these accounts provide estimates of the money supply holdings of a number of sectors; these include, consumers and nonprofit institutions, nonfinancial corporations, unincorporated business, various financial sectors, governments, etc. Our flow of funds experts use heroic ingenuity in deriving these estimates. The fact is, however, that the statistical basis for dividing up the money supply among these various sectors is unsatisfactory.

What are the possibilities of obtaining the sectoring of the gross flow data for money and near money that are needed to carry

our understanding of money use beyond a crude stage? None too good, unfortunately, if only because there has been too much disposition to ignore monetary data of this type or to be content with theories that can be evolved from simple aggregates. Moreover the practical difficulties of obtaining gross flows by sectors are substantial. Using elementary statistical techniques the data-gathering job is enormous and adapting more elegant methods to this particular problem seems to have failed because of the lack of rapprochement between the statisticians and the bankers or the banking theorists. Some enthusiasts who espouse the sectoring approach expect that electronic bookkeeping will produce all the sector or flow data anyone could desire. This might be possible but it is far from likely without a major effort to persuade bankers to code accounts and transactions with that end in view.

For a number of years, there have been just two nationwide statistical series collected which bear on the question of money use, and unfortunately each has been oriented to the service of other or more minimal analytical objectives than those I have been describing. The Federal Reserve System now compiles debits (outflow) data for 344 metropolitan centers. However, there is no sectoring by-product. Moreover, scant attention is given sample consistency over time or to making the national series representative of total transactions. The regional data are used as measures of local business activity and in some Federal Reserve Districts, notably Chicago and Minneapolis, quite successfully. The national data are used to construct seasonally adjusted turnover rates for New York, six of the largest financial

centers and 337 other reporting centers.

The System also makes an annual survey of the ownership of demand deposits. This survey sectors ownership as of one date toward the end of January and is subject to possible timing aberrations of a particular date due to the month or the day of the week or the position of the date in the typical pay period. Although the survey provides a rough indication of the level of holdings by several types of owners, the timing problem and statistical shortcomings mean that changes in ownership from one year to the next, inferred from this annual measurement of level are unreliable.

It can be seen that the System has been working around thefringes of the problem of measuring money use. What is needed is a more direct effort. The basic problem is not one of measuring level but of measuring change in money balances. These changes should be associated with the inflows (credits) and outflows (debits) of various depositor groups. The groupings should be dependent upon economic characteristics that are relevant to money use. The number of sectors chosen would be a compromise between what is practical and what is analytically desirable. For individuals, a distinction between employed and self employed would seem to be crucial and further sectoring by income level would be highly desirable. For corporations, some breakdown by size would be called for. As to frequency of reporting, only some experimentation will indicate the best time interval--weekly, biweekly, monthly, or quarterly. In any

case, it might be desirable to experiment with average balances over each period and with minimum balances within each period.

These are only beginnings. We are, in fact, so largely ignorant of the area of money use that we cannot now write a set of completely definitive specifications for adequate data collection in this field. I can foresee, therefore, that when we have advanced as far as the horizon of this paper, the added analytical insights then gained will suggest still further refinements in the flow of data. We must not deplore this kind of "unfinished" data design. It is rather the sign of a living data program, responsive to the gradual evolution of our analytic powers.