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Tomorrow's Money as Seen Today

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Tomorrow's Money as Seen Today

To introduce the subject of "Tomorrow's Money as Seen Today" it is appropriate to first say something about today's money as seen yesterday. The textbook writers who trained my generation always referred to the dual role of money as a "medium of exchange" and a "storehouse of value." The kind of money, in their view, that best met the latter function was a precious metal, usually gold or something readily convertible into that metal. Their indoctrination emphasized the problems of making money stable in value. We are still very much occupied with that problem though our reliance for stability is shifting from precious metals to men and institutions.

Money as a transaction medium was given much less attention perhaps because the writers of the time felt David Ricardo had adequately covered the subject in the Bullion Report 100 years earlier. He noted that "...the effective currency of a country depends upon the quickness of circulation, and the number of exchanges performed in a given time as well as upon its numerical amounts; and all the circumstances, which have a tendency to quicken or to retard the rate of circulation, render the same amount of currency more or less adequate to the wants of trade...., above all, the same amount of currency will be more or less adequate, in proportion to the skill which the great money lenders possess in managing and economizing the use of the circulation medium."

Alfred Marshall commented, after quoting these words: "This terse statement carries far." And indeed it does--not only in the sense that Marshall had in mind but in the sense that I can use these same words 160 years later as a text for discussing tomorrow's money.

Ricardo's message is quite simple and one of which every banker will become increasingly aware, i.e., the more efficiently money is used as a transactor (medium of exchange) the less the amount of money needed to function any given flow of transactions for an individual, a corporation, a government, or the economy as a whole. The fact that bankers are aware, or are becoming aware, of Ricardo's generalization, however, has not always led them to consider the consequences for their institutions and profession of a vast acceleration in the efficiency of money use such as we are just beginning to experience.

You, as bankers, have first-hand evidence of increased deposit activity in your own institutions, I am sure. It is most evident in those accounts managed by corporate treasurers who have learned the lessons of cash management well--and often even directly from the "great money lenders" Ricardo referred to. Money is also used more intensively in small budget accounts where minimum or average balance requirements are relaxed and transactions paid for on a fee basis.

The over-all statistics of money stock and money use reveal the same economizing trend. Today, turnover of private demand deposits in New York City metropolitan area is about 110 times per year, double the levels prevailing in a period of high economic activity a decade ago. In six other large financial centers current turnover rates are a little less than one-half the New York rate (52) and up 80 per cent. In 200-odd other reporting metropolitan areas turnover is roughly one-third of the New York rate (34) and up 50 per cent over the mid-fifties.

The very high levels of turnover in New York (twice weekly) and other major centers (weekly) are a reflection of the large volume of financial transactions. But the increases in rates of turnover in all centers are a manifestation of closer money management by banks' customers, including increasing readiness to invest idle balances in interest-earning instruments. Thus, even before automation has had a significant effect on efficiency in the use of money other factors have been working in the same direction.

In banking we have now passed the threshold in use of one of the most dramatic innovations of our time--the computer. The technology of EDP, moreover, is breeding new generations of equipment at an accelerating rate. It is being spurred on by the tremendous range of applications in science, industry, military and civilian government--in fact in virtually every phase of present-day life. Banks cannot escape the consequences of this

technological revolution--to ignore the changes EDP entails for banking can only result in an "accelerated atrophy" of the banks and bankers who choose that course. To accept and exploit the technology may involve expense, hard work, and harder decisions, but it will be at least as rewarding as survival.

I am hard put to it for a description, a technical analysis, to invoke in a persuasive way the powerful and spreading effect of automation or cybernetics. The first digital computer was completed 20 years ago--there are tens of thousands in use today. In the interim, speculations and pronouncements on the computer's role in our economy have barely outpaced achievements in hardware innovations and applications. Perhaps I can use John Barth's skill with words to suggest to you by indirection the computer's true potential.

"All WESCAC does is say 'One goat plus one goat is two goats',.... Now, it does this in fancy ways, and quick as a flash; but what it comes down to is millions of little pulses, like the gates between the buck-pens: and all a gate can be is open or shut. The only questions it can answer are the kind we can reduce to a lot of little 'yesses' and 'nos', and it answers in the same language." "This elementary capacity WESCAC shared with its crudest ancestors, though it had been refined enormously over the years. ...thus too it became possible for the beast to educate itself beyond any human scope, conceive and execute its own projects, and display what could only be called resourcefulness, ingenuity, and cunning. ... Yet... there were respects in which the callowest new freshman was still

its better: mighty WESCAC was not able to enjoy, for example, as I enjoyed frisking through the furze; nor could it contemplate or dream. It could excogitate, extrapolate, generalize, and infer, after its fashion; it could compose an arithmetical music and a sort of accidental literature (not often interesting); it could assess half a hundred variables and make the most sophisticated prognostications. But it could not act on hunch or brilliant impulse; it had no intuitions or exaltations; it could request, but not yearn; indicate, but not insinuate or exhort; command, but not care. It had no sense of style or grasp of the ineffable: its correlations were exact, but its metaphors wretched; it could play chess, but not poker. The fantastically complex algebra of Max's Cyclogy it could manage in minutes, but it never made a joke in its life."

These words will, I hope, do two things: first, convince you that computers now in use, such as WESCAC, are more than equal to the task of money settlement and accounting and, second, reassure you that this particular generation of computers, at least, will not engulf your role and self esteem as bankers for there are still several banking functions left to perform that even a computer cannot do better than you.

How will the computer change money and its use? What will motivate users and suppliers of money to adopt computer technology? Since money has changed little during the generations while modern industrial economies have altered nearly every facet of our way of living, is not its demonstrated adaptability persuasive that the old money technology will continue?

These are the questions confronting every commercial banker who is not looking toward an early retirement. How should they be answered? Let me give you the basis on which I would reach a judgment.

I start with a background shot. Money settlement, or the transfer of purchasing power from one individual to another, has had a sluggishly evolving technology of its own. It began with the movement of treasure--bullion or gold and silver coin--from one safekeeping spot to another with all the hazards of theft or loss and high cost of transport and security arrangements. Gradually bullion and gold and silver coins were displaced as money by tokens made of cheap metal or paper. Similar security problems remained but the paper currency, because of its denominational flexibility, added great convenience for the settlement of larger and larger transactions. Meanwhile, a still more efficient money instrument, the demand deposit check, came into being; it has now become our major money device and accounts for over 90 per cent, by volume, of money settlements. What likely will be the form of tomorrow's money?

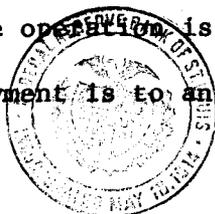
Coins will remain, but mainly for carfare, sales taxes and penny ante transactions. Even today they make up only 10 per cent of the total of coin and currency in use which, in turn, is only slightly more than 20 per cent of the total money supply. Currency use will decline sharply and the denominations likely to have a substantial circulation will be limited to \$1s, \$5s, and \$10s. The larger denominations will be preferred only because of non-traceability of currency transactions. Today, the aggregate of \$1 and \$5 denominations is about equal to that of coins; the \$10 denomination total is not quite as large as coins, \$1s and \$5s combined.

Bank deposits will continue to dominate the money pool perhaps even more than today; but exactly what extent will depend upon how skillful bankers are in supplanting the "sovereign's" money with their money and how resourceful they are in maintaining their deposit totals in the face of a space age acceleration in deposit account activity.

Thus tomorrow's money will be very much like today's in many respects; coins for vending machines, small denominations of currency for large tips, and bank deposits for the real business of the economy. The point of difference will be the way in which demand deposits are used--a change made possible by computer technology.

The idea that money settlement--paying and being paid--requires an actual or implied purchaser-seller or debtor-creditor confrontation probably accounts for the fact that we have not long ago used a far simpler system of settling our accounts. Since transfers go through the banking system ultimately why not start the process by having depositors directly tell their bank what to do. Consider some magnitudes: there are about 14,000 banks but 140 do well over 50 per cent of the business. But there are 70 million of us who have accounts in the banking system and we send each other 60 million checks each day. The processes and processing required to complete those transactions are expensive, time consuming and are geared to a completely obsolete technology--hand sorting and manual posting of paper evidence of payment.

Tomorrow's money will have an entirely different flow pattern and it will be centered on 200-500 computer centers scattered throughout the nation. A modified giro system will be used, in which the payor will initiate the settlement process, but will do so by communicating, not with the payee, but with his bank--notifying it directly whom to pay, how much, and when. Most of this information will be received at the bank in machine language; if not, it will be converted to that form, and the bank's computer will process the bookkeeping entries internally for amounts drawn on it. If one computer handles the accounts for several banks the operation is still almost entirely an internal one. If payment is to an account in another bank, the



information will be automatically routed into that bank's equipment. Bank positions will also be adjusted frequently throughout the day by debits and credits to member bank accounts with the Federal Reserve System. The computers will transmit printed-out confirmations to the payor and advices to the payee at appropriate intervals. The print-outs could be transmitted by mail or telephone wire, at the option of the customer. In the case of larger customers, the bank's computer will communicate directly with customer's equipment.

In this system there is no check sorting and re-sorting, no shipment of checks from bank-to-bank or bank-to-customer, no storage requirements for checks, no kited checks, no endorsement, no N.S.F. checks, no float, and a minimum of manual processing.

The money of tomorrow I have been describing has a variety of implications for all of us. For banks' customers, one of the most significant is that it will enable everyone to manage his account as closely as he likes and the bank allows. Since he will have absolute control over the debits with no nonsense about mail float it is likely he will also negotiate fixed timing arrangements for credits from his employer, customers, and debtors. And, of course, he can always dial the computer for the latest information on the status of his account. The ensuing advantage for him, in addition to the computer's convenient documentation of his transactions, is, of course, the opportunity to minimize his idle cash. Thus, he can have a higher proportion of his resources invested with intermediaries--bank or nonbank--or in market instruments.

And these will still give him, under ordinary circumstances, such liquidity as he needs for contingencies or seasonal fluctuations in his expenditures. This package of banking flexibility would clearly be of practical significance to a large number of depositors.

There are advantages for banks, too. The giro computerized relationship between the bank and its demand depositors is not dependent on the convenient proximity of banking offices and should enable banks to widen their service areas, at least partially breaking the bondage of an original location. Probably more important for bank earnings is the fact that the computer is not only faster and more economical than the present system of money settlement, but that it can simultaneously offer a wide variety of tie-in accounting and financial services for a bank's customers, thus giving it the opportunity to become the community's accounts keeper--and with profit.

On the other hand, the system will entail at least one major difficulty for banks when they face the potential of a substantial attrition in demand deposit balances as computers accelerate money velocity. If banks generally decide to use activity fees to cover the cost of the money services they offer, it is almost certain that a vastly smaller money supply than is now required will be more than ample.

Banks could, however, bolster sagging demand deposit aggregates by using compensating balance requirements to cover

the cost of account activity. And if an additional compensating balance were used as a sort of commitment fee for a personal or business line of credit, the attrition on demand deposit balances would be even less. Another possibility is to use the great flexibility of the computer to create a new relationship between demand and several strata of time accounts in a given bank, making replenishments in demand accounts and overflows into time accounts matters of contractual relationship individually programmed for each customer--thus, though a bank might be losing demand balances it would be gaining time funds.

So far, it sounds as though everyone who accepts the new technology will gain. This is very nearly true. A possible exception is the Federal Government, whose coin and currency outstanding is, in effect, an interest-free loan of about \$40-odd billion from the public. Though it costs something to maintain the coin and currency in working condition this expense far from fully offsets the interest saving on \$40 billions. But, tomorrow's money will have coins and some currency, too, and it will be a larger economy, so the amount gradually displaced is not likely to be much noticed. Of course, it will only happen as fast as the public is persuaded to turn to the cash/charge card and the budget checking account as substitutes for pocketbook money. The rate, if not the manner, at which bank credit cards are coming into use recently suggests the trend toward substitution will shortly be under way.

A few people are interested in the implications of tomorrow's money for tomorrow's money managers. How will they deal with a monetary cyclotron built from a network of computers programmed to achieve the maximum efficiency for everyone's money? Could the system be programmed so that for a given day's work no one had more or less in his account, taking into account inflows, than needed to cover outflows? If so, velocity would approach infinity and money supply zero. However, in any foreseeable system we would have a few billions of coin and currency and probably of demand deposits. What seems more to the point for the money manager is that no one will be holding money as a storehouse of value, a liquidity hoard or anything other than a medium of exchange. Thus, the separation of the liquidity and transaction functions of money may well force money managers to turn themselves into liquidity managers, or into near-money managers, so to speak, and entail the development of an entirely new set of tools for using the financial system to influence economy's growth and stability. The very least that will happen to us as money managers will be some enforced rethinking of money supply theories in a computerized economy.