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THE NEEDLE IN THE PAPER STACK

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Progress toward an electronic payments system in the Sixties was steady, if not spectacular. Checks and drafts, ledgers and journals, securities and passbooks are in the process of giving way to electronic recording, transmission, manipulation, storage, and access. But the most important development may well have been the beginnings of the psychological adjustment of bankers and their customers toward the concept of handling money without moving paper. Since much of the historical business of banking has been built around the inefficiency of its customers and the aged mechanics of traditional money transfer and security, it is hardly surprising that resistance to a change in transfer mechanics is inherent in the very structure and operations of banking.

The role of banking and the adaptive capacity of bankers has, of course, been subject to other fundamental changes in the 1960's. By now it is widely recognized that earlier fears of a reduction in the industry's credit role due to lagging demand deposit growth underestimated the resourcefulness of bankers. As their customers became more efficient in their use of money, bankers became more inventive in their use of other intermediation devices and techniques. They were so successful in this that banking's share of credit markets actually rose significantly in the decade of the 1960's. This more innovative mood of bankers has been demonstrated in the resourcefulness with which banks

managed by means of liability instruments and arrangements to disperse some of the monetary restraint recently administered through Regulation Q ceilings. It has also been reflected in their use of affiliates, subsidiaries, and one-bank holding companies to hold their existing customers, to penetrate new markets, and to offer new services. Thus, the record clearly shows that in these areas bankers did innovate successfully in the Sixties, given a sufficient incentive.

In light of this track record, bankers might also have been expected by now to have made much more progress in dealing with another of their major challenges--the huge stacks of paper piling up as product of their money transfer operations. The reasons for laggard bank progress in this area are not entirely obvious--they involve the subtle interlacing relationship of currency, checks, securities, and ledgers to banking's traditional services, structure, and rationale.

To be sure, there have been desirable improvements in check processing effected in the Sixties, but these do not begin to solve the basic problem. It is not enough that virtually all of the 80 million checks written daily should be processed (i.e., added and sorted) on electronic equipment. The savings from efficiency and speed of that process are swamped by the burdensome practice of coincidental check handling: the sorting, batching, proofing, shipping, resorting, rebatching, reproofing, reshipping, and so on that continues until the document itself is repatriated for the drawer's final proofing and filing.

Electronic technology now available and of proven capability can provide a vastly more efficient functional performance if permitted to slough off paper tracers and by-products. The needle in our paper stack that we need to find is the requisite incentive to motivate banks and others to install and accept the economies and conveniences of an electronic settlement system. Basically, we know the nature of the problem and we know how to solve it--what is lacking is enough motivation to act.

Before pursuing further the incentives and altered attitudes prerequisite to an all-electronic system, let me point to some recent developments in money settlement techniques that underline our rapidly improving capabilities in this field.

The most important of these, in my opinion, are those which will help to eliminate, or eliminate after an initial input, all subsequent paper handling, sorting, storing, or referencing. The term "paperless entries" has been used to describe electronic record-keeping systems. Once initial inputs have been converted into electronic terms, all subsequent operations can be performed electronically, with, of course, visual or print-out access.

There are elements of a "paperless entry" system in many present practices. The long-established Federal Reserve wire transfer facility is one such example. These interbank transfers of funds involve no shipment of currency or checks and no further processing of the

original instruction or authorization. While this facility is not now a wholly "paperless" system, it is capable of becoming one since it has recently been modernized and greatly expanded. With the expectation that there will be a very rapid growth of money movements by wire during the next several years, a new Federal Reserve communications system has been designed that can take care of at least a twelve-fold increase in transactions. It can be expanded to accommodate perhaps as much as 100 times present volumes.

The switching gear for this new system has been installed at Culpeper, Virginia, and is now in the process of checkout. It will accommodate transfer rates varying from the relatively slow teletype rates to the higher speeds of magnetic tape transceivers and of computers. The transmission equipment used will depend on the type and volume of traffic between the different points in the Federal Reserve System. The types of messages flowing between the Federal Reserve Banks and between the Banks and the Board of Governors include not only transfers of funds, but also a variety of textual, accounting, and statistical messages. However, the predominant and most valuable use of the new communications system will be the transfer of funds.

The communications switch, called the M1000, is a specially designed computer system which works on the store-and-forward principle. It presently will allow a transfer rate of up to 4,000 characters per second, and this is expandable to 8,000 characters per second or possibly

more by providing additional memory and processing units. All Federal Reserve offices will be connected directly to the central switch. As volume expands, plans call for use of secondary collector facilities to speed traffic along a smaller number of trunk lines. Initially there will be over 120 terminals including those located at the Treasury Department and at the Commodity Credit Corporation.

Each of the twelve Federal Reserve Banks and the Board of Governors will have magnetic tape equipment which will be used for transferring accounting and statistical research data at medium transmission speeds over 2400 baud lines. Computer-to-computer communication will allow data transfer at much higher rates of speed, and this capability is now in the planning stage.

Switching of messages will be handled automatically for messages between Federal Reserve Banks, and with this capability it is envisioned that a wire transfer originating at a member bank or clearing center may be routed through the Federal Reserve network and automatically switched to the receiving bank. The Chicago Federal Reserve Bank will install a M1000 switch this summer which will enable it to route messages among all of the midwestern banks linked to its facility and also to any other Federal Reserve Bank or commercial bank similarly linked to a Federal Reserve Bank. Plans for similar installations at New York and some of the other Federal Reserve Banks are under way. Such services will provide a communications network that can support a paperless payments system in the 1970's.

Another element of "paperless entry" coming into general use substitutes some form of automated or electronic input for pay checks. Since a large proportion of payments made by corporations and governments are for salaries and wages, a significant improvement in the payments mechanism would be achieved if electronic processing were adopted in this one field alone. The Federal government uses a procedure of this kind for making payments to employees, retirees, and pensioners. Additional applications are under study. The response of payees has not been very enthusiastic: 10 percent of Government civilian personnel elect to receive their pay in this manner, 28 percent of military personnel. The Federal Reserve System offers a similar program for its employees, and at the Board in Washington 35 percent of our employees have opted for this arrangement.

Withholding sums from pay checks for tax and other payments is another common payment practice which has important elements of a paperless system. One of these elements is the agreement by the employee (enforced by law for taxes) to have payments made on his behalf by his employer. This agreement also fixes the time of payment and, where practicable, a uniform amount for each pay period. Given this authorization, the employer can combine and accumulate payments to a common payee. Withheld taxes, union dues, group insurance premiums, charity contributions, etc., are made as a single payment in lieu of scores, hundreds, or thousands of monthly checks from individuals.

Many efforts have been made to extend the withholding principle to utility payments, rents, insurance premiums, mortgage payments, and the like. Such plans work best if the payees are entities having a large number of customers in a given area, if the payments are at regular intervals, and if the amounts are identical or can be made so by averaging over some given period. While pre-authorized payment plans have yet to become popular, some have hopes they can be packaged to gain broad acceptance.

The Home Loan Bank Board, for example, has recently published a proposed change in its regulations which would give savings and loan associations the authority to pay, at the shareholder's request, amounts from savings accounts to third parties. The language of the proposal conforms to the wording of Section 1716 of the Housing and Urban Development Act of 1968; it specifies that the payment orders be nonnegotiable and nontransferable.

The authorizations could either designate payment of a single obligation or they could instruct the association to pay a member's periodic obligations, such as utility bills, and could be honored even if the amounts to be paid were not specified. The payment orders could effect a direct transfer to a savings account of the third party if the third party agreed to the arrangement.

It would be possible, for example, for a shareholder to authorize his association to pay each month the minimum balance due on

his revolving charge account at a department store. A shareholder could have his pay deposited directly with his association.

A successful implementation of this proposal would have a significant impact on the payments system of this country. Savings and loan associations, by internal transfers of funds into the accounts of utilities companies, insurance companies, and other large receivers of payments, would displace a very large volume of individual checks.

The credit card is another accumulating and combining device for payments. The clientele of the card issuer, however, is not a captive group as are employees subject to withholding. Card holders must be won over by promotion, credit access, convenience, and some day, no doubt, discounts for cash. Credit cards make it possible for the purchaser to write a single check to settle many obligations, and they, therefore, take a considerable burden off of the currency circulating and check-clearing systems. Credit card systems still produce large numbers of sales slips which must be cumulated in preparation of final settlement. But in this case, the accumulator--the card issuer--has enough economic incentive to install the kind of electronic systems to handle large volumes of transactions economically and expeditiously.

Finally, mention should be made of the recent introduction of book entry procedures as a substitute for the issuance and safe-keeping of Government securities held by the Federal Reserve. As this practice is extended--and it inevitably must be because of its

overwhelming cost and convenience advantages--to securities of other issuers, the service of safekeeping on the scale to which we have become accustomed will give way to still another application of paperless accounting; it will be none too soon, either, considering the paper blockades in the security business.

I could go on with further illustrations, but those advanced should suffice to demonstrate our rapidly evolving potential to effectuate a full-blown electronic-payment and record-keeping mechanism.

This brings me back to the need to find-or apply-the motivational needle. No doubt an important factor inhibiting more rapid progress is the disinclination to change on the part of many bankers. This is more than a matter of inertia and the apparent security of the status quo. The innovative bankers of the 1960's who grappled with the problems of that decade are not likely to dodge the implications of a paperless technology. No better example of this attitude can be found than in the organization by the San Francisco and Los Angeles clearing house associations of a committee called SCOPE (Special Committee on Paperless Entries) to study and recommend arrangements for exchanging paperless credits and debits between banks. The committee has included among its objectives the development of uniform standards and procedures for exchanging automatic credits and debits via magnetic tape, punch cards or deposit tickets, and also functioning the accounting entries for normal check clearings by means of magnetic tape.

The implications of such developments lead to policy alternatives that challenge the basic structure and operation of the banking industry. They extend well beyond the repercussions of the inevitable reduction in float implicit in simultaneous charge and credit. Float, after all, is a credit extension that has to be supplied by someone and, in an economic environment, paid for by the beneficiary in one form or another. All Float, that is, except the average of \$2.5-3.0 billion supplied by the Federal Reserve to promote a more economical and convenient settlement system. This accommodation, obviously, should not become an impediment to the evolution of an electronic settlement system. The principal problems for the industry are much more basic. What happens, for example, to the elaborate facilities and arrangements for security when the paper they exist to protect no longer exists--having been replaced by electronic storage? What happens to banking office networks which accommodate customers' deposit and withdrawal convenience when money moves by wire? What new services can be offered at these branch offices as old services are phased out?

As we come closer to the "paperless" era, we become more perceptive of the adaptations required in our institutions and in our ways of doing business. There can be no turning back. But neither can we move forward so precipitously as to commit ourselves to a blind alley in development.

The banking industry and the Federal Reserve have the major responsibility for achieving steady progress toward an electronic payments mechanism. I suspect an outsider would judge that neither of us is working at full capacity to do so.