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SPECULATION ON FUTURE INNOVATION: IMPLICATIONS FOR MONETARY CONTROL

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Innovation in the financial system has, as the discussions this morning underlined, a long history of important contributions to the growth of our nation's prosperity. Furthermore, there is every reason to believe that innovative efforts to improve our financial system will continue to play a key role in maintaining this country's economic well-being. Such innovation is needed in a vigorous society in order to insure continued progress in providing an adequate economic base for meeting national goals and aspirations. Its existence is, I believe, actually a sine qua non for the nation's satisfactory economic progress.

Basic types of economic innovation

When we look at innovative contributions to such economic progress, two types of innovation are readily distinguishable. The first has been a consequence of changes in scientific knowledge and its applications, changes that have produced the strong technological forces that have reshaped human life during the twentieth century. In the economy, these new technologies have given us the capacity

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Mr. Paul Metzger, the Board's chief long-range planner, has assisted me in the preparation of this paper. The views herein expressed are my personal responsibility, and should not be taken as official Federal Reserve positions.

to produce goods in volumes that were not conceivable before. Such alteration in our productive capacity can be termed process innovation. It has introduced a new era in history, typified by the capacity of industrialized societies to move away from the chronic goods scarcity that characterized all of prior history.

The second type of innovation has come about as a result of individuals' and corporations' desires for new and better goods. These desires both encourage, and are fostered by, technological changes and resulting process innovations, but are distinct from them. The innovations flowing from these changes in people's wants can be termed product innovation. This second type of innovation is abundantly displayed in the economic history of the more affluent industrialized societies during this century.

Many sectors of our society have generally relied with considerable success on market processes to stimulate both of those broad types of innovation. But this has not been entirely true in the case of the financial sector, on which society has placed governmental controls of various types in order to achieve purposes that go beyond the progress achieved through innovation.

Limitations on financial innovation

To make an effective contribution to sustained economic progress, the financial system needs not only to be innovative but must also be reasonably strong and healthy. Innovations in other sectors of the economy cannot promote economic progress when the financial sector is unable to provide a flow of monetary resources adequate to nurture the growth of the economy.

My remarks today will focus primarily on recent developments and possible future innovations in the nation's banking system, since it lies at the heart of our financial system and insuring its continued safety and soundness is critical to the well-being of that financial system. As you know, the banking system has recently been undergoing significant strains, due in significant part to the current adverse conditions in the economy generally. That our banking system is, by and large, weathering this period of difficulty well is a good measure of its resiliency and of the flexibility and competence of most bank managements.

The continued vitality of the banking system, especially during periods of stress, is dependent not only on its capacity for innovation, but also on the prudent conduct of bank managements and their continuing awareness of the need to promote public confidence in our banks. In times of economic uncertainty, concerned customers are particularly likely to scrutinize closely their banks' financial condition. Should signs of weakness multiply, uneasy money could decide to seek haven elsewhere, further increasing pressures on banks and on the entire financial system. If such pressures should exceed the limits of safety, the financing of economic activity in general could be disrupted.

The financial sector--and its keystone, banking, in particular--has therefore been subjected to monetary, regulatory and supervisory limitations far more stringent than those typically applied to other sectors of the economy. In a sense, prudent banking conduct is deemed necessary to permit healthy innovation to flourish. There is thus a kind of dynamic tension between forces impelling the innovative activities of banks on the one hand, and on the other, the compelling need for prudence and the avoidance of actions that would result in weakening the public's confidence in our banking system. While a measure of entrepreneurial aggressiveness by bank managements has helped make our banking system a progressive one, in the final analysis only a prudent management can assure that system's continued well-being. It is the overriding aspect of the public interest in banking, and in the financial sector in general, that establishes necessary limits on the scope of permissible innovations in this area.

Useful distinctions among financial innovations

The recognition that financial regulation constrains at least some financial innovation leads to a useful categorical distinction for the next stage of our analysis. While I apologize for introducing still another classification scheme for innovations, I believe the focus of decision of financial innovations can be sharpened by this division. Following the tradition that a label gains respect as it adds syllables, I shall term these two categories circumventive innovation and transcendental innovation.

Circumventive innovation. This is the sort of innovation that comes about when free market forces and institutions seek to circumvent the monetary and regulatory controls imposed in the name of those public policy considerations to which I have referred. As a result, services and processes are invented that work around the rules, for example, those imposed for monetary policy purposes.

This process entails both benefits and dangers. The beneficial innovations tend to impel governmental decision-makers to reassess their initial policies that have been partially circumvented. Through this process, policies that are not in fact serving their original or justifiable purposes come to be more closely reviewed to see whether their elimination or modification might better serve those same ends. And indeed, sometimes the underlying rationale for a policy itself needs to be reexamined in the light of changing circumstances to determine whether the policy and its objectives continue to be worthy.

Various such innovations have, for example, sprung up over the years seeking ways around Regulation Q concerning maximum rates payable on time deposits.

In the course of examining these innovations in order to strengthen that Regulation, the policy on which it rests has come under close scrutiny. As a consequence of this review, over 20 per cent of the dollar amount of all commercial bank time deposits has been exempted from interest rate ceilings. Furthermore, there now appears to exist a greater willingness among banks, bank customers, and banking regulators to consider the possibility of significantly altering or even removing the remaining limitations this Regulation imposes at the appropriate time.

Dangers can also arise, of course, whenever there are efforts to circumvent regulatory actions taken to promote the public interest. In several instances, timely steps have needed to be taken to insure that desirable regulations are substantially complied with and that any loopholes in those regulations are effectively plugged.

Those who innovate circumventive processes thus have a significant responsibility to attempt to insure that those processes will not tend to weaken the financial system, either in the near future or over the longer-run.

They can do this best, I believe, if they examine carefully whether their actions are more likely than not to promote their own long-run interests. It seems to me that most institutions will find their long-run interests are best served when they are least likely to be seen by influential segments of the public as being antithetical to the best interest of society as a whole. Not to examine possible circumventive innovations from this longer viewpoint seems to me to invite substantial risks to future profitability.

Regulators, on their part, need to have the capacity to reassess the public interest objectively in the light of significant efforts to circumvent the policies they have initiated. In short, the public interest will be served best when financial innovators bear their own longer-term interests more fully in mind, and regulators strive to retain the ability not to view actions that tend to thwart their policies as necessarily inimical to the public good.

Transcendental innovation. Let me turn now to the second category of financial innovation, which I have called transcendental innovation. This occurs when changes are sought by customers and financial institutions of a kind essentially unrelated to regulatory control. To be sure, such changes might so alter banking performance as to call forth some new regulations to constrain their effects, but they are impelled basically by reasons that transcend the existence of regulatory handicaps.

Looking back over the past decade or so, a number of very significant such innovations come to mind. (I understand Professor Meigs will be addressing this area in more detail, and this brief glance back at the thrust of recent innovations may serve as an introduction to his remarks.) It has frequently been said that over the last ten to fifteen years a virtual "revolution" has been underway in the very nature of banking, as compared with Depression-era banking. I would agree with those observers who have noted that banking is taking on a strikingly new pattern, a pattern that is a key part of the evolution that the entire financial system is undergoing.

To appreciate this rather dramatic change more fully, we need only think about a few of the more salient developments that have been taking place in banking.

These would include: widespread bank utilization of certificates of deposit and other money market instruments in order to raise funds; the growing reliance of banks on services for a fee to offset increasing customer economization on demand deposit balances; the spread of floating-interest-rate assets and liabilities among banks; the increasing integration and interdependence of financial systems throughout the world, particularly among the highly industrialized nations; and the growth and diversification of bank holding companies both in the United States and abroad.

These very significant changes have required most leading banks to develop a different style of management--more sophisticated, frequently internationally oriented, even to some extent entrepreneurial. It should be noted that all of these developments are by no means fully integrated as yet into banking or the broader financial system, but rather are gradually becoming assimilated, and so the full impact of these changes has perhaps still to be felt.

Aside from a few noteworthy innovations such as the floating-rate note, it seems to me that transcendental innovation has slowed both absolutely and relative to circumventive innovation during the current period of economic difficulty. As the economy recovers and business conditions stabilize, we can anticipate that changes will be promoted which are now being held in abeyance due to the uncertain economic climate.

Internal financial changes.

With these classifications of innovation added to our tools of analysis, let us proceed to speculate about some current and prospective financial innovations and their implications.

No discussion of financial innovations can be complete, of course, without mention of the substantial internal changes that are underway in our financial and banking institutions. These changes have already exerted, and will in the future even more, I believe, exert a significant impact on the capacity of these institutions to develop innovations under the two broad categories I have described.

I am referring here to the heavy reliance upon computer technology that has developed both within and between financial institutions. This shift to electronics has permitted not only the innovations in internal production processes that are most frequently noted. It has also, perhaps even more significantly, enabled decision-makers to interact with computers in a manner that carries substantial implications for the future of the financial system.

<u>The information revolution</u>. Let me dwell a bit on this particular aspect of innovation in order to illustrate the breadth of the effects that can flow therefrom.

What has occurred constitutes what might be termed an "information revolution". Although it has had, and will continue to have, a major impact on all sectors of the economy, I will focus on its effect on the financial system.

The computer has permitted us to assemble and retrieve raw data in tremendous volumes that could not previously have been handled. More important, it has enabled raw data to be manipulated and presented in a form that makes them usable as "information" that tells us what we previously did not, and perhaps otherwise could not, know. Thus, information that previously did not exist has been created, prepared in a manner that makes it useful to decision-makers, and made available to them as it may be needed.

Corporate treasurers, as well as bankers innovating new services, have already taken advantage of the information capabilities of computers to keep a closer watch on their firms' cash positions than was previously possible. This new sophistication has, for example, in large part been responsible for the increased ability of corporate depositors to reduce their demand balances to minimal working cash requirements with significant consequences to the liquidity needs of the banking industry.

Just as bankers, treasurers, and many other decision-makers in the private sector have benefited from the informational capabilities of the computer, so have policy-makers in government. Through the use of computers, monetary policy-makers have been able to prepare financial statistics which permit us to develop information essential to the formation of monetary policy. By employing econometric models that utilize computer-manipulated economic and financial data, monetary policy makers have been able to increase significantly the sophistication of the policy formation process. This is not to say, of course, that the information to which the Federal Reserve now has access is complete. On the contrary, much remains to be done to improve the scope, quality and timeliness of the statistical series we employ; however, we believe that while substantial improvement in the information base of monetary policy is possible, we would obviously be in far worse straits without the information-generating capability the computer has given us.

What we and our banker friends may be most laggard in now is in conceiving the full scope of helpful questions which this new information technology can help answer. Our imaginations seem to me slow to grasp the full impact of what can be illumined by electronic information systems, and so we still depend basically on hunch and preconception in many areas where they represent an inferior substitute for obtainable knowledge.

There are, of course, caveats to be observed in developing and utilizing computer technology correctly. First, the effort to develop data for monetary, or indeed other public policy, purposes must be made consistent with the right of privacy of individuals and institutions. The preservation of this right is vital to the maintenance of a free society. Appropriate legal and technical safeguards must be designed to insure that the high value our society places on the right of privacy is not unwittingly undermined by the informational needs of public policy making.

A second caveat is that excessive reliance on computer-derived information for monetary policy can present certain dangers. The selection and development of significant data series and the construction of econometric models are both processes that entail the exercise of sound judgment at many critical points. That same exercise of judgment must necessarily be applied in evaluation of the economic and financial projections that these computerized models produce. The use of the critical faculties cannot be supplanted because we employ computer technology.

To rely wholly on computer output would be to elevate a helpful policymaking tool to the level of a *deus ex machina*. The consequences would, I believe, be to distort the monetary policy-making process in the most serious fashion. Thus, while computer technology offers us considerable benefits in public policy formation, care must be taken that it is correctly employed and that its very real limitations are clearly understood.

The use of electronic technology has thus brought about in the financial system both an information revolution and a production process revolution. These two transformations, of course, tend to be mutually reinforcing. Together they expand considerably the capacity of financial institutions to develop new products in the form of services that better meet the needs of their corporate and individual customers. This capacity for innovation seems to me likely to continue to grow throughout the financial system at an accelerated pace.

Prospective external innovations by banks

Let me turn now to some possible changes we are likely to see in what the banking system offers its customers. To change the pace of my presentation, let me set forth a number of changes which I foresee in brief and assertive fashion.

Banks with the wherewithal to do so will probably continue to press to expand the number and nature of the financially-related services they can provide. They may also seek broader geographic scope for their expanded services, with some chance of success particularly through their near-bank corporate affiliates.

We can anticipate that additional efforts will be made to create instruments attractive to investors and rewarding to banks. As a consequence, variable-interest-rate instruments may be expected to proliferate, and the use of "equity kickers" may also grow.

Yet another consequence that may follow from the production process transformation I have described is the gradual emergence of an electronic payments system that would carry forward computer-linkages among financial institutions and between them and their customers.

Such a means of transferring funds will offer many new opportunities for banks to develop innovative methods of meeting their customers' demands for more convenient and comprehensive services. But just as the banking industry will seek to utilize an electronic funds transfer system as a source of greater profitability, so too will other institutions which may also be afforded access to such a system. Thus, the electronic payments mechanism will no doubt become a source not only of heightened profits for those institutions which utilize it successfully, but also of heightened competition among them across a broad spectrum of both new and old services. It should also prove a source of benefits to customers, in the form of quicker, broader, and more integrated services.

In short, most banks (except those which, for reasons of size and market scope, are relatively insulated from the pressures I have examined) will have to be innovative and responsive to their customers' needs in order to perform adequately their basic function--gathering funds from saver-investors and disbursing them in an inventive manner and at a reasonable profit to the borrowers who seek them.

Both the information revolution and the emergence of an electronic funds transfer system seem likely to lead to still greater minimization of idle cash, not only by corporate treasurers, but also by a growing number of more sophisticated consumers. Corporate and individual customers will tend to expect and to demand an adequate return for money held for them by banks and other financial institutions. They will probably also come to rely more heavily on temporary extensions of credit to cover short-term variations in their own cash needs. Financial institutions, in their turn, can be expected to become even more reliant than today on fees derived from the performance of a wide array of diversified financial services. They will do this in order both to offset the decline of demand deposit balances and to insure enhanced profitability.

We can anticipate that as a broader array of allied financial services are offered by more financial institutions seeking to provide one-stop, multi-purpose services, banks will experience increasing competition from a broader range of competitors. Thus, while the forces for change that I have outlined will enable banks to be more responsive to the demands of their customers, other institutions will increasingly provide services similar to those banks will offer.

This scenario of likely future developments in the financial system has, as you can imagine, significant implications for monetary controls. I will elaborate on those implications in a moment.

Impact of innovations on geographic limits of banking

As substantial innovations in production processes, products and attendant information capabilities transform the services and procedures of our banking and financial system, they also expand the geographic limitations within which those systems function. Those limitations have become, and I believe will continue to be, progressively less important in the changing environment I have described. Although the physical structure of our banking system in particular remains oriented to limits imposed by local and State boundaries, these are becoming less and less meaningful. Most larger banking organizations have already effectively expanded services to encompass regional and national markets. This expansion can, in part, be attributed to the dramatic changes in production process and information capability which we have witnessed over the past decade. These changes can be expected to gather momentum as we move towards implementation of an electronic payments mechanism. Such innovations should continue to exert powerful pressures on local and State restrictions on banking.

Moreover, the geographic limitations being circumvented or transcended by these financial innovations are not solely those within our own country. As I indicated earlier, we have witnessed a growing interdependence among the various national economies and financial systems. Barring unforeseeable social or political disruptions, I believe this trend will continue to gain strength, particularly among the industrialized nations.

This broad pattern of change has been transforming major corporations generally, and the banks that serve them have also been part of this trend. Banks and bank holding companies have expanded their international operations significantly, partly in response to the need to better serve the U.S. firms that have greatly enlarged their own overseas operations.

In the future, as more foreign corporations enter this country to operate from U.S. locations, American banks will no doubt have further reason for diversified foreign activities, since they will want to serve directly the overseas head offices of their foreign-owned clients here. Some major American banks and bank holding companies have already earned, and more will earn, a substantial portion of their profits from dealings with foreign customers both in the United States and abroad. In so doing, they will need to be able to compete with foreign banks in the United States and overseas on an equitable basis. Competitive pressures among banks from various countries will undoubtedly push the different national limitations on banking services toward greater and greater harmonization over time.

Implications for international monetary control

The world-wide economic and financial integration that has been proceeding apace has significant implications not only for the structure of our financial and banking systems, of course, but also for world-wide monetary control.

The vast amounts of investible funds that are now accruing to key oil-producing nations generate enormous problems of readjustment for the international financial system and for nations attempting to maintain adequate monetary control over their own economies. In a world in which chronic shortfalls can be expected to continue in the capital funds available to meet nations' wants, capital from such sources as the oil-producing nations should be welcomed. But the possible volatility and volume of such capital flows cannot help but increase the difficulties inherent in the conduct of national monetary policy.

For example, a policy of monetary restraint in the United States could become less effective if key borrowers had ready access to major overseas sources of credit to finance activities in the United States over which the Federal Reserve had little effective control. By the same token, a policy of monetary expansion here might have less predictable effects on expanding credit in the United States and might be rendered less effective if U.S. banks utilized available resources to expand their overseas activities rather than for loans which might expand business activity here in the United States.

Smaller countries than ours in which international trade and payments are a much larger relative share of their total activity have already experienced the above phenomena, sometimes to a painful extent. It seems reasonable to forecast a gradually increasing intrusion of that consideration in U.S. affairs as well. Furthermore, there is one respect in which such effects on the U.S. might be accelerated. I refer to the growing dimensions of the offshore Eurodollar market, which is free of reserve requirements and most other monetary controls. Funds borrowed in that market can pay for U.S. goods and services (or products in any other country in which the holder can transfer assets for dollars.) It therefore seems important to me that central banking authorities consider the desirability of some extension and coordination of their reserve requirement and other monetary regulations so that this comparatively unregulated and reserve-free market in banking services does not evolve to such an extent that it threatens the ability of individual countries to pursue their domestic monetary policies.

This situtuion calls, I believe, for renewed and persistent efforts, particularly by monetary authorities in the leading industrial and financial nations, to achieve an increased level of mutual understanding. If this can be done in a spirit of cooperation based on recognition of the interdependence of all nations in today's world, fears of the possible adverse consequences for individual nations of the continued free flow of international capital might be substantially allayed. This might do much to improve the climate in which needed socio-political agreements could be negotiated on a basis of mutual respect and amity.

We should remember, however, that the possibility of reaching understandings with respect to capital flows is limited by the level of mutual confidence that can be attained. Such confidence can be much impaired or enhanced by the nature of each nation's legal institutions and the extent to which they assure that foreign capital receives, and is likely to continue to receive, nondiscriminatory treatment.

Implications for domestic monetary controls

Let me elaborate further now on the implications of these speculations about financial innovations for the future of domestic monetary controls in the United States. As I intimated earlier, the noninterest bearing deposits that have been the anchor of monetary policy are likely to dwindle relatively, to a significant extent as a consequence of the innovations that are taking place in the banking and financial systems.

As this process moves forward, the helpfulness of various measures of the money supply should decrease. This effect has already been noted with regard to the monetary aggregate, M_1, made up as it is of noninterest-bearing currency in circulation and demand deposits. In time, M_1 may come to play a role similar to that presently filled by currency, or even by subsidiary coin. That is, M_1 may eventually provide a satisfactory reflection of small routine transactions taking place in the economy, but it will neither affect nor reflect dependably the extent of the discretionary spending that is occurring.

As this transformation of the role of M_1 takes place--possibly over several decades--it will become a less and less meaningful base upon which to predicate either monetary expansion or contraction. In contrast, the measure of liquidity most directly related to discretionary spending would probably come to be some amalgam of at least all deposit-type holdings, perhaps plus some fraction of the immediately convertible debt paper of others, with possibly even some allowance for the credit lines immediately available to borrower-spenders.

From the viewpoint of monetary policy makers, it seems likely that the magnitudes of such monetary or liquidity aggregates would continue to be important as ingredients of economic stimulus. In this environment, central bank actions would need a broader base in order for monetary policy to maintain some effectiveness. Since a growing variety of interest-bearing deposits and credit instruments may come to satisfy the economy's liquidity needs, and affect its saving-spending decisions, it may become advisable to extend monetary reserve requirement to more of such instruments as well. In my view these reserve requirements could be effective monetarily even if set at a relatively low percentage level. While substantially broadening the base of monetary policy, such new reserve requirements would have the additional advantage of countering some of the pressures for circumventive innovations. As more nonbank institutions provide credit and deposit-type liabilities to corporations and consumers alike and come to approximate the functions of banks, it becomes increasingly inequitable, as well as decreasingly useful, to rest the full weight of monetary policy controls on the nation's commercial banks. A movement toward broader reserve requirements on such interest-bearing liquidity instruments might eventually be perceived as both a rational and equitable step to meet the growing need to strengthen the nation's capacity to execute better its monetary policy.

I am aware of a good deal of academic literature that argues that monetary reserve requirements are inefficient and unnecessary. But to me, such analysis too conveniently assumes that banks and other financial intermediaries will always want to hold some kind of central bank liability. I do not believe that necessarily follows in the kind of world toward which we are moving. I can even conceive of a system in which the payments mechansim has moved outside the central bank; and in that eventuality, without reserve requirements to provide it a fulcrum for its reserve-altering operations, the central bank's open market transactions might come to have a monetary effect not too different from those of the Social Security trust fund or the Mint. For assured monetary effectiveness at all times, the central bank needs to be able to control the available total of some asset which the financial system (or at least a key part of it) feels it has to have. Explicit monetary reserve requirements seem to me the most dependable means of providing that essential ingredient for monetary control.

There is one overriding evolutionary tendency in the financial system that I should underline before I finish. In the future, we can anticipate that more technically perfect markets will develop as the financial system evolves. These markets will be taking advantage of both process and product innovations to better serve increasingly sophisticated saver-investors and borrowers. In such markets, the price of money reflected in the rates of interest will tend to have relatively even more influence than now on the discretionary spending decisions of consumers and corporations alike. To state the same point in reverse, nonprice rationing devices and similar market imperfections will fade, and a larger and larger share of the total implementation of monetary ease or restraint will have to be accomplished by means of interest rate changes. It also follows that the amplitude of interest rate changes which the financial system can stand will in effect set the outer limits for what monetary policy can contribute to economic stabilization.

It might be noted, incidentally, that reserve requirements fit well into such a financial system. One of their effects is a kind of internal interest cost to the affected parts of the financial system. Adjustments to the price effects of reserve requirement changes can be accomplished smoothly in the kind of financial system we are envisaging.

Concluding observations

I hope these remarks concerning possible future financial innovations and their implications for monetary control have proven stimulating to you. The forces shaping the broad categories of innovations I have delineated, are, I believe, long-term ones that should prevail unless stemmed by the vulnerabilities of the financial system itself or excessively hampered by the public policy constraints under which our financial and banking institutions operate.

The transformations that have been taking place have, in my view, generally contributed to the national economic welfare. It therefore seems to me an important part of the responsibility of financial regulatory authorities to continue to provide a climate in which sound innovations that strengthen the financial system and improve its services to the public can flourish, while less well-considered efforts at change receive appropriate remedial attention.

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