

Technology and Financial Services:
Regulatory Problems in a Deregulated Environment

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4 TECHNOLOGY AND FINANCIAL SERVICES: REGULATORY PROBLEMS IN A DEREGULATED ENVIRONMENT

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Giant steps have been taken toward the deregulation of deposit financial institutions in the past several years. Except for the continuing prohibition of interest payments on corporate demand deposits, regulations governing rate maxima on various classes of deposits have been removed or drastically relaxed. The asset and liability powers of thrift institutions have been enlarged, making these organizations effective substitutes for commercial bank services for many bank customers. Technically, the ancient Glass-Steagall Act remains to separate commercial and investment banking, but there has in fact been considerable intermingling.¹ Similarly, McFadden Act and Douglas Amendment restrictions on interstate branching and bank subsidiaries have been loosened by state regulatory actions and through the use of loopholes found in federal laws.² Worldwide financial markets have opened. Funds flow across national boundaries—sometimes lawfully and sometimes not—taxing the ability of national regulators to insulate domestic markets from forces emanating in other countries.³

In the United States, the deregulation of financial institutions has not been without its difficulties. Some institutions have ignored or resisted fundamental market and regulatory changes. In so doing, they have exposed themselves to the potential and, in some cases, the actuality of extinction. At the opposite end of the spectrum, deregulation seems to have encouraged other institutions to engage in practices

subsequently revealed to be gross mismanagement and fraud. Further, the course of deregulation has had differential effects depending on the size and functional types of financial institutions.⁴

The problems of deregulation are many. We will discuss two of the major ones. First, we consider monetary policy in the context of deregulation and new market phenomena. The very concept of money is less sharp than it was when modern central banking was developed. There are more types of institutions and more market instruments available as substitutes for commercial banks and their deposit liabilities. The intermediation process itself has changed so that the fluctuations in the velocity of popularly defined money aggregates may offset policy directed changes in the sizes of those aggregates.

Second, we examine issues relating to the "safety and soundness" of the emerging system. Increased inter- and intraindustry competition, differential regulatory effects, and, perhaps, more latitude for mismanagement and deceptive and fraudulent practices have led some to question whether the deposit insurance innovation of the 1930s is now sufficient to prevent panics, bank runs, and other more or less general liquidity crises. Related to this is the possibility of defaults arising from breakdowns in the highly complex technological delivery system.

THE BACKGROUND

Technology, market forces, and regulation have interacted in complicated ways in financial markets. Market innovations employing the abundance of new techniques in computing and information technologies have occurred at a rapid pace. Regulatory change has been slow, however. The more aggressive and innovative of the financial institutions have been restrained in important ways by regulators and by legal actions brought by firms in their own and in other financial sectors. Indeed, academics and a series of study commissions have for more than two decades virtually unanimously urged sweeping regulatory reform; these repeated recommendations were largely ignored until market conditions years later forced at least partial implementation.⁵

Alfred Marshall (1897) summarized well the diminishing relevance of old regulations and old market regimes when technology created new market opportunities. "When one person is willing to sell a thing at a price which another is willing to pay for it," Marshall penned, "the two

manage to come together in spite of prohibitions of King or Parliament or of the officials of a Trust or Trade Union." So it has been in financial markets. When combinations of quantitative monetary controls and interest rate regulations made it impossible for banks to supply credit needs through traditional channels, new market techniques and new markets arose. On the one hand, suppliers of funds found non-bank financial intermediaries willing to pay rates in excess of those imposed by the regulations and, on the other hand, those demanding funds found non-bank intermediaries that could—at a price—meet their needs. While the new markets may have been regarded initially as aberrations—as temporary black markets—that turned out not to be the case. The black markets of one year became the legitimate markets of the next.

The financial history of the last decade is one of Marshall's dictum writ large. Those willing to pay for financial services—pay a *market* rate—have found others willing to sell such services—at a *market* rate—despite regulatory prohibitions on the offering of services and on the payment of market rates by the older institutions. Actually the process began long before 1970, but it was not recognized widely for what it was. Gurley and Shaw (1956) pointed out that growth in the liabilities of non-bank financial intermediaries permits the economy to function with less of the traditionally defined "money." Tobin (1963) made somewhat similar observations. It was not generally appreciated, however, that other markets less affected by reserve requirements and less affected by rate regulations would emerge to fulfill the market needs that banks and the other deposit institutions could not. Furthermore, few saw the prohibition of interest on demand deposits as a regulation that would fundamentally alter the ways in which money and moneylike balances are attracted, managed, and used and that would, indeed, even require reconsideration of the practical definition of money.

For context, however, a number of pre-1970 facts should be kept in mind. First, the growth in commercial bank time deposits, savings and loan deposits, mutual savings bank deposits, and credit union shares after 1950 was several times the rate of growth in bank demand deposits. Second, mutual fund net assets grew from around \$2 billion in 1950 to over \$50 billion in 1970. Third, in the same period, commercial and finance paper outstandings rose from virtually none to over \$33 billion, and a market for this paper appeared.

Fourth, a small Eurodollar market developed, with dollar-denominated foreign deposits escaping burdensome domestic reserve and interest

rate regulations. In large measure these deposits were holdings of a growing number of foreign branches of U.S. banks. Fifth, domestic negotiable certificates of deposit in denominations of \$100,000 or more were introduced in 1964—and in short time became subject to both time deposit reserve requirements and Regulation Q interest rate regulations. Sixth, an organized Federal Funds market developed. Seventh, bank customers became increasingly sensitive to changes and differences in interest rates. Businesses developed sophisticated cash and funds management practices and, as evidenced by the 1965–66 and 1969–70 “crunches” and disintermediation, a growing number of individuals also moved funds as interest rate differentials appeared. This meant, among other things, that the flow of funds to the thrifts was jeopardized when higher or even equivalent rates appeared elsewhere. Eighth, banks resorted to extensive branching and multibank and one-bank holding company organizations to attract funds and to diversify. Finally, and harbingering the changes of the next decade, computerized internal and clearing operations among financial institutions and their customers and by their customers were in place by 1970.

After the late 1960s, the new mix of technology, regulations, and market forces created innovations in financial services at an accelerated pace. When inflationary forces heightened and nominal interest rates rose, policy efforts to restrict growth in the conventional monetary aggregates induced increased use of intermediation channels other than bank loans and bank deposits. The enormous growth of assets other than bank demand deposits and the accompanying rise in turnover rates are shown in Table 4-1.

NOW accounts were introduced by Massachusetts mutual savings banks, with commercial banks contracting to serve as clearing agents. Here were found interest bearing checking accounts for small, household depositors. Share draft accounts at other thrift institutions provide a similar service. Money market mutual funds were started in 1972 for institutional accounts but quickly were oriented toward services for individuals and nonfinancial businesses as well. Banks themselves marketed small and large denomination certificates of deposit. Many of these were of short maturity, and the large denomination certificates were negotiable. Thus, both large and small certificates were to a degree—and to certain customers—partial substitutes for noninterest bearing bank demand deposits. It was only in 1980 that regulations allowed commercial banks to offer money market deposit accounts in competition with money market mutual funds. The same year witnessed the start of the effective phasing out of other aspects of Regulation Q.

Table 4-1. GNP, Selected Money, and Asset Aggregates and Turnover Rates, 1968 and 1984.

	1968	1984
Gross national product (billions)	\$873.4	\$3662.8
M1-A. Currency plus all checkable deposits (average for year)	192.3	543.3
M1-B. Currency plus bank demand deposits (average for year)	192.2	400.1
Income velocity of M1-A	4.54	6.74
Income velocity of M1-B	4.54	9.15
Commercial paper (December, billions)	\$22.5	\$161.8
Banker's acceptances (December, billions)	2.2	41.3
Money market mutual funds (December, billions)	—	230.2
Overnight repos and Eurodollars (December, billions)	—	57.5
Large denomination time deposits (December, billions)	37.5	416.2
Small denomination time deposits (December, billions)	100.5	885.6
Money market deposits (December, billions)	—	415.1
Checkable deposits other than commercial bank demand deposits (December, billions)	0.1	153.3
Turnover of demand deposits, major New York banks (December)	136.8	1910.8

Sources: Board of Governors of the Federal Reserve System; Council of Economic Advisors.

Underlying the changes shown in Table 4-1 are radical reductions in the transactions costs involved in asset switching. New markets for new instruments and improved efficiencies in markets for old instruments were facilitated by the developments in computing and information technologies. Market information became more complete, more broadly available, more timely, and less costly. The costs involved in transacting and in clearing balances fell by orders of magnitude.

This reduction in transaction costs for asset transfers and account clearing has affected the nature and efficiency of the payments system. Suppose that just a few years ago someone decided to buy a TV set but, despite having other assets, the person had inadequate cash and/or checking account balance. A down payment might have been made so the

merchant would hold the set. Then, a loan from a bank might be arranged, some securities might be sold (at fixed commission rates), or funds might be withdrawn from a savings account. With time delays and other transactions costs, an adequate *collected* balance would ultimately appear in a checking account and payment for the TV set could be made. The merchant, in turn, would deposit the check to his account and, when that became a *collected* balance, he could use the proceeds to replenish inventory, pay wages, and so forth.

The process is now very different. The purchaser of the TV set, we assume, has a plastic card issued by some host institution—not necessarily a bank. The card, by the nature of the information contained thereon, in the hardware and software of the system to which it affords access, and the contract between the cardholder and the issuer, indicates the assets to be exchanged for the TV set. The assets might be in an account with a securities or commodities dealer, a cash reserve in a life insurance policy, shares in a money market mutual fund, or any of a number of account types at deposit financial institutions. Payment might also be made through activation of a line of credit, with an increase in the payer's holdings of which have been reduced (or the same nominal value of liabilities increased). The merchant, in turn, can transfer virtually instantaneously the funds he has received to increase holdings of any assets (or reductions in any liabilities). The average size of a particular transactions balance—say, a checking account balance—maintained by the buyer of the TV set is largely irrelevant to her ability to buy a TV set or other things. Further, there need be no correspondence between the type of asset she uses to buy the TV set and the type of asset the merchant acquires as a result of the transaction. Neither of their checking account balances at any point in time is critical in determining the aggregate of their expenditures and receipts. And neither needs to have such a balance at any time other than the instant the payment is made, if at all. On average, each can keep close to a “zero balance” bank account.

This new mode of transacting would not occur, of course, if the cost of exchanging assets were high. And they were high in the past. As a consequence, substantial positive balances were held in noninterest bearing checking accounts to minimize those costs.⁶ In the future, as transaction costs fall further in response to new information processing technologies, the period of time over which an individual or business will wish to hold such balances is bound to decrease further. If households and businesses will wish to hold only those assets for which there are no

preferred alternatives—given transactions costs, interest rates, and other items affecting the attractiveness of the assets. The old type of deposit financial institution liabilities—that is, noninterest bearing demand deposits, and various below-market yielding savings instruments—are likely to be among this preferred group of assets.

TECHNOLOGY AND QUANTITATIVE CONTROLS: THE PROBLEM AND A PARTIAL SOLUTION

The overall effect of lowered transactions costs is surely to limit the efficacy of historic quantitative control of the monetary aggregate. Thus, whether one were to pursue a "Chicago School" policy, opting for a fixed rule with respect to the growth of a monetary aggregate, or a policy based on neo-Keynesian views, with discretionary control of such an aggregate and emphasis on interest rates, it is arguable that neither will work very well. The problem is that when the authority elects to control a monetary aggregate—really, any arbitrary aggregate—technology makes it possible for a new market to arise in which there is trading for a new, moneylike instrument. That is just what was happening as CDs, NOW accounts, commercial paper, Eurodollars, repos, money market funds, and other new instruments and markets came into existence.

As these new instruments are used as money, they are sold and purchased ever more frequently. Consequently, the turnover rate or velocity of a money aggregate (with a fixed definition) rises. And, depending critically on how money is defined, the increases in velocity are not trivial. The income velocity of what we define as M1-A (currency plus all checkable deposits) increased from 4.54 to 6.74 per year between 1968 and 1984; that for what we call M1-B (currency plus demand deposits at commercial banks) more than doubled, going from 4.54 to 9.15 per year.

Looked at as the turnover rate of demand deposits—the use of these deposits for final purchases of goods and services, intermediate goods and services, factor payments and exchanges of real assets, financial instruments and currencies—the effects are much more dramatic. For major New York City banks, the demand deposit annual turnover rate increased from 136.8 to 1510.0 between 1968 and 1984. This rate had been about 50 in 1960 and reached over 2,100 in late 1984.

It is possible to sketch an appreciative or descriptive theory of this process. Thus, consider the following (incomplete) system of identities and equations depicting the macroeconomy:

$$(1) i = i(\bar{M}, Y, \dot{P}, N, \dots)$$

$$(2) N = N(\bar{M}, Y, \dot{P}, i, \dots)$$

$$(3) Y = C + I = MV$$

$$(4) C = C(Y, i, \dot{P}, \dots)$$

$$(5) I = I(dy/dt, i, \dot{P}, \dots)$$

$$(6) \dots$$

In this system, i represents the level of market-determined interest rates, \bar{M} is a monetary aggregate comprised of the deposit liabilities subject to direct control by the central bank, Y is the national product, and \dot{P} reflects inflationary expectations. We use N to depict an aggregate (of possibly changing composition) of non- \bar{M} deposit and non-deposit liabilities of banks and non-bank financial institutions. The other variables take their normal macroeconomic definitions. A number of variables, identities, and equations not specified here would complete the system. Each variable and equation refers to a point in time, in an essentially dynamic model.

Now suppose that the central bank elects to restrict the growth of \bar{M} , due perhaps to its perception of \dot{P} . Following conventional theory, this policy action has the (partial) effect of increasing i , in equation (1). From equation (2), the policy action will cause an increase in N . The latter effect arises in part for reasons suggested by the old "availability doctrine."⁷ That is, since borrowers are constrained by the monetary policy action from loans the effect of which is to increase \bar{M} , they turn instead to borrowings, the effect of which is to increase N , non- \bar{M} deposit, and non-deposit liabilities.⁸

If interest rate regulations prevent market-determined increases in the rate paid on \bar{M} deposit balances, another effect comes into play. The increase in i causes businesses and households to demand smaller \bar{M} balances and larger N balances. Thus, there is an increased demand

for the N liabilities at the same time the unavailability of \bar{M} -based loans increases the supply of N liabilities.

The equilibrium or convergence properties of this process are not clear. Tobin (1963) notes that the increase in i from equation (1), plus the added effects of increases in (i) due to increases in the outstandings of the N liabilities, ought to dampen aggregate demand through equation (4) and (5). The increase in i should eventually bring about some sort of N/\bar{M} equilibrium relationship. At the same time, however, the impact of new technologies may more than offset any static equilibrating forces. "Learning" occurs on both the supply and demand side of the market for *new* N -type instruments. Transactions costs fall as learning progresses, or trading volumes rise, and as the use of the new instruments spreads. The markets for the N -type instruments become more efficient. If in addition there are exogenous or endogenous supply side factors making \dot{P} insensitive to policy tools working on the demand side, N may continue to grow irrespective of the restraints on \bar{M} .

The situation is such that, with only slight exaggeration, a decision by the monetary authority to "push down one button" to restrict the growth of one monetary aggregate causes another "button"—unrecognized and unpredictable—to pop up to take the role of the first. This may be so pronounced a response mechanism that MV is not perceptibly affected. That is, the elasticity of V with respect to M could be as large (absolutely) as -1.0 . Technology and the market may interact so that a particular monetary policy, once used effectively, subsequently becomes ineffective.⁹

A delineation of the sufficient conditions for reestablishing a stable relationship between some \bar{M} aggregate and other macroeconomic variables is well beyond our capabilities. We do recommend two necessary steps to reestablishing the efficacy of central bank quantitative control techniques. The first of these is the further deregulation of interest rates and deposits. Because of developments in technology and market sophistication, non-deposit institutions can fashion payments, savings, and investment instruments of virtually limitless varieties. What are now money market funds with fairly high initial deposits and minimum payment orders can easily be changed to increase or decrease either or both of these conditions. They can be changed to term contracts without immediate and third party redemption privileges. They can be used as the vehicle for credit or debit card use in selected or in general application. They are already available as funds shifting devices, providing

holders the option of moving holdings across various maturities, between taxable and nontaxable investments, among different types of fund assets, and from one institution to another (e.g., from a bank deposit to a fund, and vice versa).

Interest bearing instruments with varying negotiability, redeemability, maturity, risk, and tax features are attractive to business and household holders or any users of funds. The deposit structures of the present deposit institutions need to be freed of arbitrary rate regulations. This recommendation applies to those deposit structures that separate the old demand deposits from NOW and other types of transaction accounts as well as those that distinguish between individuals and nonprofit organizations and all other depositors. Regulations should be rescinded so that institutions could offer whatever type of "deposit" contract they wish to whomever they wish. For example, what are now regulated "penalties for withdrawal" would be, if they appeared at all, no more than contract terms arranged by particular buyers and sellers on particular accounts.

There has long been recognition of the "blurring" between demand deposits and other deposits of banks. We urge that there be a specific policy redirection for the law and companion regulations to drop such distinctions. With automatic transfer accounts, cash management accounts, and the rapid and nearly costless transfers to, from, and among what are now noninterest bearing demand deposits and other liabilities of banks and non-banks, the only consequence of retaining the demand deposit classification will be to have the measured turnover rate of demand deposits approach infinity as a limit. As we pointed out earlier in our discussion of the new technological mode of transacting, the days when individuals and businesses will hold for any appreciable period a bank balance at zero interest (or with other unattractive terms) in return for the ability to make transactions are largely past.

The elimination of deposit interest rate regulation would not mean that every type of account would bear the same market rate. Rather, it would mean that market rates would appear that explicitly account for the varying contractual terms. Rate regulations, among other distorting effects, have tended to cause "packaged" pricing, often including apparent "free" transacting. Transactions are not costless. Without regulations, the market rates paid on various deposits will tend to reflect the value of the features of the account as determined by the preferences of buyers and costs and sellers, with at least the freedom for explicit pricing to cover transactions costs.

There is a second necessary step to reestablish the viability of central bank's quantitative control techniques. There must be a change in the availability and conditions for deposit (reserve) accounts at the central bank. We recommend that all mandated reserve requirements be abolished and that the central bank be required to pay interest on balances kept with that bank. Any financial institution desiring such balances would be permitted to have a reserve account. Such a policy change would have major implications for the historic institutional separation of commercial banks—whose liabilities we have thought were uniquely “money”—and the non-bank intermediaries. Yet functionally the change is quite in the tradition of central banking. The rationale for reserves at the central bank is their use in controlling the creation of money.

Reserve requirements in their present noninterest bearing form are universally recognized as being the equivalent of a tax. As such, they impose burdens on all institutions to which they apply. Mandatory reserve requirements, like interest rate maxima, spawn new means for avoiding them and are, over time, self-defeating in the present technological and market environment. Further, because of the taxlike effect, they invite other institutions not subject to reserve requirements to provide the same service on a tax-free basis. In theory, one might try the converse and mandate reserve requirements for every provider of deposit-like services. This is not a practical solution however. Given the manifold technological opportunities available for providing such deposit-like services, it would be impossible to find, impose, and enforce reserve requirements on them all.

Interest payments aside, accounts at the central bank are attractive to institutions because of their use in interbank, interregional, and international clearing. This use of such accounts would continue so long as central bank pricing for and the quality of such services do not bring forth alternative clearing organizations. Many institutions with clearing requirements would, we suspect, find it more efficient to clear through balances at other banks. The latter, however, would form a nexus of institutions that, in turn, would keep balance at the central bank. An efficient hierarchical network of clearing arrangements would be encouraged.

With these arrangements, the central bank would have improved interest rate and quantitative controls. By raising the rates paid on reserve balance, the central bank would induce individual institutions to act to increase those balances. Other assets would tend to be sold, lowering their prices and raising the yields on them and, of course, other market

rates of interest. The reverse would occur were the central bank to lower the rate paid on reserve balances.

While the market effects described would occur in response to variations in the central bank's actions with respect to the interest rate on reserve balances, the overall quantity of these balances would be unaffected. In the absence of the central bank's acting to change the supply of central bank credit (through open market operations, discounting and other lending, and ignoring changes in float, the gold stock, special drawing rights, Treasury balances, and currency in circulation), the total of these balances is fixed. They can be increased or decreased by the central bank, but not by changes in the portfolio preferences of the individual financial institutions concerning their holdings of central bank balances. As is true now, what one institution gains (loses) in reserves by such transactions is offset by losses (gains) in the reserves of others.

With the suggested scheme, institutions holding reserve balances would be doing so voluntarily. The taxlike effects of reserve requirements would thus be avoided. Further, individual institutions could use central bank balances for liquidity reserves and "secondary reserve" purposes. Central bank open market operations would work much as they do now, and with the same or improved consequences. Total reserve balances would rise with open market purchases and decline with open market sales. The "loosening" or "tightening" of money would spread over the entire set of money and funds markets, more perfectly, perhaps, than is now the case. The market would serve to reestablish reasonable stability in the relationship between "base money" and policy-related economic aggregates--GNP and the price level.

SAFETY AND SOUNDNESS: THE PROBLEM AND DIRECTIONS FOR SOLUTIONS

After three decades of slow change, financial markets have been experiencing radical change. Yet all this while, the regulatory system governing "safety and soundness" has been remarkably static. The basic elements of the arrangement started with the Banking Act of 1933 and may be summarized as follows:

Deposit Insurance System

The Banking Act set up a deposit insurance system for commercial banks

independent of the composition of their balance sheets. A similar arrangement for savings and loan associations was created in 1934. Although deposits are by law insured up to some fixed amount (now \$100,000), the disposal of the marketable assets and liabilities of failed institutions through "purchase and assumption" has led to effective 100 percent insurance for all deposits—at least until the 1980s.

Limits on Assets and Liabilities

Direct regulation of the permissible assets and liabilities for particular institutions was mandated. Each of the specialized institutions—commercial banks, mutual savings banks, and savings and loan associations—are restricted with respect to the set of financial assets and services they can offer. Institutions are further subject to detailed balance sheet regulations—maximum allowable loans to particular customers, maximum percentages of a particular class of assets, reserve provisions, and so forth.

Monitoring of Banks

In the case of the banking system, the Act required the monitoring of balance sheets through quarterly reporting and periodic examination by the regulatory agencies. When examiners uncover problems, banks are subject to direct intervention by regulatory authorities with substantial enforcement powers.

Disentangling the effects of safety and soundness regulation, the use of macroeconomic tools, and the general economic environment on the solvency of insured institutions is a difficult task. Nonetheless, the effectiveness of the regulatory system can be assessed in part by the fact that it has been generally successful. The periodic banking crises that were a familiar feature of the American scene up to the Great Depression were not a problem for over fifty years. Compared to the period prior to 1933, bank failures have been infrequent and localized events. However, in the last decade a number of problems have arisen that have shaken the regulatory system. Public debate over regulatory reform has now reached the stage where suggestions by academics and regulators have been fashioned into concrete proposals centering on these problem areas.¹⁰

There seem to be three perceptions underlying the current reform proposals. First, people feel that the riskiness of the banking environment

has increased. The interactions among technological developments, financial innovation, macroeconomic instability, and de facto and de jure regulatory changes have given rise to this perception. The substantial increase in the number and size of problem and failed banks, and the succession of major financial strains of the last decade, are both well documented.

Second, people think that in the current regulatory environment, banks have an inherent bias toward excessive risk taking. The joining of de facto 100 percent deposit insurance, insurance premia that are not risk-related, and the small capital commitments by bank equity owners results in there being no economic group with a substantial interest in controlling risk. As banks get into trouble, moving closer to a position of zero net worth, the incentives for excessive risk-taking increase. In an environment with greater market opportunities and market pressures for risk taking, this bias becomes more pronounced.

Third, many think that the current regime of examination and direct balance sheet control is costly and inefficient; it is thought that increased reliance on market and marketlike mechanisms is likely to achieve better results at a lower regulatory cost.

Before considering the proposals in detail, the basic premises behind the public debate require examination. There is no doubt that the financial system and the regulators are dealing with strains arising in part from de facto and de jure deregulation. Formerly insulated institutions face competition from unfamiliar opponents and, as institutions move across traditional product and geographic market barriers, there have been significant increases in the number of troubled and failed banks. The failures can be viewed as a competitive shakeout—perhaps analogous to the shakeout occurring in the 1930s, when an excessively large population of banks was pruned of many competitors. The question is whether further deregulation of geographic and product line restrictions will lead to a secular increase in instability that threatens even efficient institutions.

Deregulation has a double edged blade. Debate has focused excessively on the risk-increasing aspects without sufficient attention to the risk-reducing features. In fact, there are a number of reasons to believe that further deregulation will *enhance* the ability of financial institutions to regulate risk and will *reduce* the social costs of risk taking. An obvious but underemphasized effect of deregulating product line and geographic restrictions is the creation of new opportunities for diversification of both the asset and liability sides. To the extent that regional shocks and

product line risks are independent, greater opportunities for interstate branching and product line extension can reduce risks. The current rash of problem banks in the farming states, for example, can be viewed as the natural result of compelling institutions to maintain an undiversified portfolio.

The same can be said for expanded commercial bank powers in underwriting and brokerage activities—and there are reasons to believe that the risks of these activities have been overstated.¹¹ The *covariance* of the returns of traditional commercial lending and brokerage activities will be crucial determinants of the riskiness of a portfolio composed of both. Recent evidence indicates that potential gains from diversification exists.¹²

Further, the pace of financial innovations means that institutions have to offer new financial services to avoid losing traditional customers. The rhythm of innovation itself creates a source of risk that can be minimized only by allowing institutions to respond. For example, while commercial paper offerings had traditionally required the backing of a bank line of credit, this is no longer the case. The deepening of commercial paper markets in the last two decades and the consequent increased liquidity of such assets has broken this link. Unless commercial banks are permitted to underwrite commercial paper, a traditional and important part of their clientele will be lost. This is an especially telling illustration since a bank's potential risks from a line of credit supporting commercial paper offerings and from direct underwriting of the same offering are essentially the same.

The age in which a banker could assume a stable liability base in the form of "core" deposits and a stable group of loan customers with a restricted set of financing alternatives no longer exists. A measure of stability can be achieved, however, if institutions are able to offer a spectrum of assets, liabilities, and fee-based services and, to some extent, to internalize the flows that now cross legally defined institutional boundaries.

While increased geographic and sectoral competition have been viewed as factors increasing the risk to particular institutions, one can also expect a reduction in the social and financial costs of risk taking. The lowering of regulatory entry barriers should reduce the social costs of individual bank failure. An increase in the number of potential entrants in any and all of a particular bank's markets reduces the costs of closing the institution. Transferring the failed bank's assets is facilitated by the proliferation of potential purchasers. Moreover, the regulatory agencies

can intervene and close banks more rapidly, thereby reducing the risk of payout by the insurance system. The existence of more, and more powerful, "nearby" competitors permits regulators to intervene on the basis of "economic" rather than "book" value. Such intervention, in itself, changes the equity holders' risk-return trade-off and enhances the disciplinary role of equity.

The view that 100 percent de facto deposit insurance ensures that no agents have an interest in limiting risk taking by banks may be an overstatement. The exclusive focus upon insured depositors and equity holders ignores the potential disciplinary role of loan customers. Although one-time loan applicants cannot be expected to take great interest in the riskiness of their lender's portfolio, those customers with long-term, repeat relationships and established lines of credit do form a group with continuing interests in the viability of the bank. Refusals to extend credit and noncompetitive loan terms arising from a bank's inefficient or excessively risky operation will drive these customers away. This behavior may be a source of discipline on bank management risk practices regardless of the de facto full insurance.

The difficulty of transferring the loan relationship in a purchase and assumption means that there is a "partially insured" bank customer. Further, with product line deregulation, the customers of a bank will have dealings across a larger range of products—consumer finance, insurance, mutual funds, and the like. This will tend to create classes of "partially insured" customers for whom the failure of a bank will be costly.

Despite these risk-reducing aspects of deregulation, reform proposals have been presented by most of the institutional and regulatory actors. The proposals with the greatest support are:

1. Developing a system of risk-related insurance premia
2. Replacing 100 percent de facto insurance with one of only partial insurance
3. Replacing the periodic and discretionary imposition of minimum capital requirements with a strict minimum
4. Replacing the secrecy of the current bank examination process with increased public disclosure.

These proposals have been subjected to extensive academic debate; the theoretical grounding for each is surprisingly slim. There are three types of shortcomings. First, the proposed changes have ambiguous

effects on risk taking and the stability of the financial system. Second, practical implementation will be difficult and the regulatory burden will not necessarily decrease. Finally, the ability to mandate taxlike insurance premia on the risk taking of a restricted subset of financial institutions may be frustrated by the existence of unregulated institutions and activities.

Risk-related Premia

The rationale behind replacing fixed rate premia with risk-related premia is straightforward.¹³ Charging banks premia that vary directly with the riskiness of their activities will, in principle, induce a more efficient portfolio choice. An optimally calibrated system of risk premia will induce banks to impute full social cost considerations in their portfolio decisions.

The first and perhaps overwhelming problem with such a scheme is the difficulty of accurately gauging risk *ex ante*. Any attempt to measure *ex ante* asset and interest rate risk accurately would, at the minimum, require a substantial increase in the monitoring of bank portfolios. While measurement of these sources of risk is by itself difficult, the problem is complicated by two other considerations. First, these risks are not independent. Santomero (1983) has shown, for instance, that variable rate loans, which reduce the average maturity of the bank's assets and in turn reduce interest rate risk, have the effect of increasing default risk. Proper measurement would require analysis of the covariance between risks. Second, the existence of externalities implies that the social costs of risk taking must be measured. Informational externalities affecting depositor behavior and contagion effects are important features of the banking system. In a model that abstracts from the problem of measuring externalities, Pyle (1983) has shown that even small measurement errors lead to large miscalculations of actuarially correct insurance premia.

The inevitability of mismeasurement raises problems independent of the questionable effects on resource allocation. In addition to monitoring costs, one can expect an increase in bargaining costs as banks appeal bad ratings. The monitoring apparatus will have to be supplemented by an appeals process that increases the regulatory burden. Furthermore, the fluidity of the modern financial system will lead to attempts at "tax evasion." Activities with overpriced risks will tend to be shifted

toward unregulated sectors of financial markets. Indeed, this may be true of any system that levies premia on particular institutions that reflect full social costs of failure.

Recognizing that any serious attempt to measure risk accurately is impossible, the FDIC (1983) has proposed an arbitrary premium structure that independently weighs two elements. These are the bank's loan loss history and a measure of the duration of the bank's balance sheet. The former may have undesirable incentive effects that compromise a potentially useful direction for regulatory practice. While banks probably have some incentive purposely to take on excessively risky loans, the important systemic problems arise from *many* banks taking on similar loans that only *subsequent* events prove to have been a mistake. The recent experience with energy loans is a prime example.

The Quarterly Call Reports, which will be the source of the bank's loan loss history, have become an increasingly important source of information allowing the regulatory agencies to diagnose developing problems at an early stage. The reduced cost and increasing sophistication of information systems have made this possible. By tying insurance premia to loan losses, regulators will create undesirable incentives for banks to withhold information for as long as possible. The relative infrequency of on-site examinations create ample opportunities for banks to withhold information. Variable rate premia based on loan losses will compromise the regulator's ability to recognize systemic problems in a timely way. Perhaps a more desirable direction would be the design of penalties for inaccurately transmitted information. On-site examinations would be used to assess the truthfulness of the information in the Call Reports.

The fascination with the use of pricing schemes to tax *ex ante* risk taking may be misplaced. A number of writers have noted that the deposit insurance system differs in a fundamental way from private insurance schemes.¹⁴ The regulator's ability to close down failed institutions implies that, at least theoretically, depositor losses from bank failure can be driven to zero if banks are closed before they reach zero net worth. For the most part this has remained only a theoretical possibility because substantial political pressures have led to very conservative closure policies. These political pressures are largely the result of the social costs of closing institutions that are, in turn, the result of substantial entry barriers. The continued lowering of entry barriers through geographic and product line deregulation would reduce the welfare and financial loss associated with the closing of failed institutions and should increase the political attractiveness of doing so.

Partial Coverage

The FDIC has proposed that the insurance agencies precommit themselves to a maximum percentage payout to uninsured depositors. The reasoning is that such depositors would then have an incentive to monitor bank risk because of the threat of loss. While it is plausible that this would lead to enhanced market discipline, the net effect of such a program may be greater instability. Before any such program is implemented, a number of issues must be considered.

The first problem is that increased monitoring of the bank's portfolio is only one possible response to partial insurance. Since information collection is costly and, on the contrary, movement in response to even questionable information is relatively costless, one wonders whether increased monitoring is a likely outcome. An equally likely outcome is a joint strategy of purchasing liabilities of shorter duration and moving funds at the first sign of trouble. Both effects, the shorter duration of the bank's liabilities and the increased speed of withdrawal in response to any sign of trouble are, in themselves, destabilizing.

This, of course, ignores the fact that banks, faced with the possibility of large-scale withdrawals in response to bad news, may have ex ante incentives to reduce excessive risk taking. Recent theoretical work, however, has shown that the deposit contract is uniquely subject to depositor runs.¹⁵ Informational externalities lead to a gap between depositors' marginal private valuation of moving funds in response to bad information and the marginal social valuation of such movements. Rational behavior by depositors can lead to the socially inefficient liquidation of bank assets. The distance between the depositor's and society's valuation of moving funds will increase if interdependencies between banks lead to contagion effects that amplify the consequences of individual bank failures. There can be no presumption that rational behavior by uninsured depositors leads to a socially optimal outcome. In turn, there is no reason to assume that the banks' ex ante risk taking will be optimal under the threat of depositor runs.

Even assuming that depositors have an incentive to monitor the riskiness of their bank before depositing funds, another problem arises. Some have argued that higher deposit rates will be the primary mechanism through which the discipline will be imposed. Troubled banks will be forced to pay a risk premium to attract funds from partially insured depositors. The higher cost of funds in response to greater perceived risk appears to have the same effect as a variable rate insurance scheme—the

market would impose penalties for excessive risk taking. Unlike the higher risk premia paid to the insurance agency, though, higher deposit rates may create incentives for *greater* risktaking. In a slightly different context, Stiglitz and Weiss (1981) have shown that higher rates can lead to riskier portfolio choices, because borrowers face strictly limited downside financial risks in the event of default. This implies that the requirement of higher deposit rates is limited as a strategy for controlling risk. Beyond some maximum deposit rate, further increases reduce the depositor's welfare. Therefore, even with *ex ante* monitoring, the strategy of holding shorter duration liabilities and running in response to bad news will supplement that of demanding higher rates.

Increased Capital Requirements

Increased capital requirements are proposed as a means of increasing the bank's downside costs of excessive risk taking. It is argued that equity owners, faced with a larger cost of bank failure, will be motivated to control risk taking by bank managers. Further, forcing banks to increase access to capital markets will induce less risk taking in order to minimize the cost of capital. Finally, larger capital requirements are proposed as a means of reducing payouts by the insurance agencies. Losses will be charged to equity before the insurance fund.

Koehn and Santomero (1980) have analyzed a particularly troublesome problem with this proposal. If the minimum capital requirement is binding, banks will *increase* portfolio risk to increase the expected return on capital. Therefore, the effect of larger capital requirements is ambiguous—the less risk adverse the bank, the more likely an increase in capital requirements will *increase* the probability of failure. To ensure an unambiguous reduction in the systemwide probability of bank failure, capital requirements would have to be set on a firm-by-firm basis, with corresponding increases in the regulatory burden.

Santomero and Watson (1977) have raised additional concerns in a general equilibrium framework. Using a model in which higher capital requirements are assumed to reduce the probability of bank failure, they show that the social costs of diverting excess capital toward the banking system may reduce the rate of physical capital formation by raising the cost of borrowing. Although these results are not conclusive, an important point emerges. Determining an optimal capital standard for the banking system on partial equilibrium grounds is suspect.

There is a connection between the earlier discussion of partial insurance schemes and minimum capital standards that should be mentioned. Limitations on the depositor's ability to impute a risk premium in deposit rates without inducing more risk taking by banks may be counteracted by greater bank capital. A more highly capitalized bank can offer higher rates without reducing depositor welfare, because capital serves as collateral, increasing losses for bank equity if there is a default.

Public Disclosure

There has been little theoretical work examining the likely effects of greater public disclosure of the regulator's information about banks. Commentators have been content to note that partial insurance schemes that exploit market discipline should be supplemented by the provision of more public information. The essential notion is that market discipline will be more rational when rumor is displaced by "fact."

Although this approach merits further consideration, a basic problem remains: Information asymmetries will exist, even with more public disclosure. We have argued that these asymmetries are a fundamental constraint on the regulator's ability to design optimal insurance premia. Similarly, the information available to depositors will, of necessity, be very imperfect. The problems with partial insurance schemes still exist even when public disclosure improves the quality of the information available to depositors.

CONCLUSIONS

Our look at the effects of deregulation on continuing regulatory needs for deposit financial institutions has produced one clear conclusion. Despite an apparent consensus that both monetary policy and deposit insurance have important continuing roles, neither is likely to work well without basic changes. Indeed, we go further; in plausible circumstances the continued use of either or both may add to rather than reduce system-wide instabilities.

We are not so confident in our diagnoses that we are able to prescribe sure cures. We are confident enough to assert that the technologies now available to financial institutions and their customers have altered fundamentally the regulatory mechanisms that can be used effectively for

implementing monetary policy and for assuring an optimal level of safety and soundness in the financial system.

NOTES

1. For a description and analysis of the process involved in this intermingling, see Phillips (1978). See Kaufman (1985) for an excellent discussion of the securities activities of commercial banks.
2. See Hawke (1985) for detail.
3. See Key (1985) for detail.
4. See Kane (1983) for an analysis of the situation in the thrift industries.
5. For comments on the difficulties inherent in regulatory reform, see Jacobs and Phillips (1983).
6. The underlying theory is well-known and basically the same as that pertaining to inventories of other assets. See Baumol (1952).
7. For a discussion of the availability doctrine, see Mayer (1968). An argument very close to that being made here appears in Smith (1956).
8. On this point, see Grantham, Velk and Fraas (1977), Kling (1981), Latane (1954), Minsky (1957), and Smith (1956).
9. This raises the specter of "Goodhart's Law," an assertion that the use of monetary controls has the effect of loosening existing relationships between money and the economic variables the central bank wishes to influence. See, in particular, Goodhart (1981) and Evans (1985).
10. See FDIC (1983) and FHLBB (1983).
11. For an evaluation of the relative risks of securities underwriting and commercial lending, see Giddy (1985) and Saunders (1985).
12. For evidence of diversification gains from the expansion of bank powers, see Heggstad (1975), Eismann (1976), and Wall and Eisenbeis (1984).
13. For more extensive critical discussion of these reform proposals, see Goodman and Shaffer (1983) and Merrick and Saunders (1985).
14. See, for example, Horvitz (1983).
15. See Chari and Jagannathan (1984), Cone (1983), Diamond and Dybvig (1983), and Jacklin (1983).

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