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FINANCIAL INTERMEDIARIES

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National Wealth and Private Wealth

The tangible wealth of a nation consists of its natural resources, its stocks of goods, and its net claims against the rest of the world. The goods include structures, durable equipment of service to consumers or producers, and inventories of finished goods, raw materials, and goods in process. A nation's wealth will help to meet its people's future needs and desires; tangible assets do so in a variety of ways, sometimes by yielding directly consumable goods and services, more often by enhancing the power of human effort and intelligence in producing consumable goods and services. There are many intangible forms of the wealth of a nation, notably the skill, knowledge, and character of its population and the framework of law, convention, and social interaction that sustains cooperation and community.

Some components of a nation's wealth are appropriable; they can be owned by governments, or privately by individuals or other legal entities. Some intangible assets are appropriable, notably by patents and copyrights. In a capitalist society most appropriable wealth is privately owned, more than 80 percent by value in the United States. Private properties are generally transferable from owner to owner. Markets in these properties, capital markets, are a prominent feature of capitalist societies. In the absence of slavery, markets in "human capital" are quite limited.

A person may be wealthy without owning any of the assets counted in appropriable national wealth. Instead, a personal wealth inventory would

list paper currency and coin, bank deposits, bonds, stocks, mutual funds, cash values of insurance policies, and pension rights. These are paper assets evidencing claims of various kinds against other individuals, companies, institutions, or governments. In reckoning personal net worth, each person would deduct from the value of his total assets the claims of others against him. In 1984 American households' gross holdings of financial assets amounted to about 75 percent of their net worth, and their net holdings to about 55 percent. (Federal Reserve, 1984) If the net worths of all economic units in the nation are added up, paper claims and obligations cancel each other. All that remains, if valuations are consistent and the census is complete, is the value of the national wealth.

If the central government is excluded from this aggregation, private net worth -- the aggregate net worth of individuals and institutions and subordinate governments (included in the "private" sector because, lacking monetary powers, they have limited capacities to borrow) -- will count not only the national-wealth assets they own but also their net claims against the central government. These include coin and currency, their equivalent in central bank deposit liabilities, and interest-bearing Treasury obligations. If these central government debts exceed the value of its real assets, private net worth will exceed national wealth. (However, in reckoning their net worth, private agents may subtract something for the future taxes they expect to pay to service the government's debts. Some economists argue that the subtraction is complete, so that public debt does not count in aggregate private wealth (Barro, 1974) while others give reasons the offset is incomplete (Tobin, 1980). The issue is not crucial for this essay.)

Outside Assets, Inside Assets, and Financial Markets

Private net worth, then, consists of two parts: privately owned items of national wealth, mostly tangible assets, and government obligations. These outside assets are owned by private agents not directly but through the intermediation of a complex network of debts and claims, inside assets.

Empirical magnitudes. For the United States at the end of 1984, the value of tangible assets, land and reproducible goods, is estimated at \$13.5 trillion, nearly four times the Gross National Product for the year. Of this \$11.2 trillion were privately owned. Adding net claims against the rest of the world and privately owned claims against the federal government gives private net worth of \$12.5 trillion, of which only \$1.3 trillion represent outside financial assets. The degree of intermediation is indicated by the gross value of financial assets, nearly \$14.8 trillion; even if equities in business are regarded as direct titles to real property and excluded from financial assets, the outstanding stock of inside assets is \$9.6 trillion. Of these more than half, \$5.6 trillion, are claims on financial institutions. The \$9.6 trillion is an underestimate, because many inside financial transactions elude the statisticians. The relative magnitudes of these numbers have changed very little since 1953, when private net worth was \$1.27 trillion, gross financial assets \$1.35 trillion, \$1.05 excluding equities, and GNP was \$0.37 trillion. (Federal Reserve, 1984).

Raymond Goldsmith, who has studied intermediation throughout a long and distinguished career and knows far more about it than anyone else, has estimated measures of intermediation for many countries over long periods of time. (1969, 1985). Here is his own summary:

The creation of a modern financial superstructure, not in its details but in its essentials, was generally accomplished at a fairly

early stage of a country's economic development, usually within five to seven decades from the start of modern economic growth. Thus it was essentially completed in most now-developed countries by the end of the 19th century or the eve of World War I, though somewhat earlier in Great Britain. During this period the financial interrelations ratio, the quotient of financial and tangible assets, increased fairly continuously and sharply. Since World War I or the Great Depression, however, the ratio in most of these countries has shown no upward trend, though considerable movements have occurred over shorter periods, such as sharp reductions during inflations; and though significant changes have taken place in the relative importance of the various types of financial institutions and of financial instruments. Among less developed countries, on the other hand, the financial interrelations ratio has increased substantially, particularly in the postwar period, though it generally is still well below the level reached by the now-developed countries early in the 20th century.

Goldsmith finds that a ratio of the order of unity is characteristic of financial maturity, as is illustrated by the figures for the United States given above. (1985, pp. 2-3)

Goldsmith finds also that the relative importance of financial institutions, especially nonbanks, has trended upwards in most market economies but appears to taper off in mature systems. Institutions typically hold from a quarter to a half of all financial instruments. Ratios around .40 were typical in 1978, but there is considerably more variation among countries than in the financial interrelations ratio. The United States, at .27, is on the low side, probably because of its many well organized financial markets. (1985, Table 47, p. 136)

The volume of gross financial transactions is mind-boggling. The GNP velocity of M1 in the United States is 6 or 7 per year; if intermediate as well as final transactions for goods and services are considered, the turnover may be 20 or 30 per year. But demand deposits turn over 500 times a year, 2500 times in New York City banks, indicating that most transactions are financial in nature. The value of stock market transactions alone in the

United States is one third of the Gross National Product; an average share of stock changes hands every nineteen months. Gross foreign exchange transactions in U. S. dollars are estimated to be hundreds of billions of dollars every day. "Value added" in the financial services industries amounts to 9 percent of U. S. GNP. (Tobin, 1984).

Outside and inside money. The outside/inside distinction is most frequently applied to money. Outside money is the monetary debt of the government and its central bank, currency and central bank deposits, sometimes referred to as "base" or "high-powered" money. Inside money, "low-powered," consists of private deposit obligations of other banks and depository institutions in excess of their holdings of outside money assets. Just which kinds of deposit obligations count as "money" depends on definitions, of which there are several, all somewhat arbitrary. Outside money in the United States amounted to \$186 billion at the end of 1983, of which \$36 was held as reserves by banks and other depository institutions; the remaining \$150 billion was held by other private agents as currency. The total money stock M1, currency in public circulation plus checkable deposits, was \$480 billion. Thus inside M1 was \$294 billion, more than 60 percent of the total.

Financial markets, organized and informal. Inside assets and debts wash out in aggregative accounting; one person's asset is another's debt. But for the functioning of the economy, the inside network is of great importance. Financial markets allow inside assets and debts to be originated and to be exchanged at will for each other and for outside financial assets. These markets deal in paper contracts and claims. They complement the markets for real properties. Private agents often borrow to buy real property and pledge

the property as security; households mortgage new homes, businesses incur debt to acquire stocks of materials or goods-in-process or to purchase structures and equipment. The term capital markets covers both financial and property markets. Money markets are financial markets in which short-term debts are exchanged for outside money.

Many of the assets traded in financial markets are promises to pay currency in specified amounts at specified future dates, sometimes conditional on future events and circumstances. The currency is not always the local currency; obligations denominated in various national currencies are traded all over the world. Many traded assets are not denominated in any monetary unit of account: equity shares in corporations, contracts for future deliveries of commodities -- gold, oil, soy beans, hog bellies. There are various hybrid assets: preferred stock gives holders priority in distributions of company profits up to specified pecuniary limits; convertible debentures combine promises to pay currency with rights to exchange the securities for shares.

Capital markets, including financial markets, take a variety of forms. Some are highly organized auction markets, the leading real-world approximations to the abstract perfect markets of economic theory, where all transactions occurring at any moment in a commodity or security are made at a single price and every agent who wants to buy or sell at that price is accommodated. Such markets exist in shares, bonds, overnight loans of outside money, standard commodities, and foreign currency deposits, and in futures contracts and options for most of the same items.

However, many financial and property transactions occur otherwise, in direct negotiations between the parties. Organized open markets require

large tradable supplies of precisely defined homogeneous commodities or instruments. Many financial obligations are one of a kind, the promissory note of a local business proprietor, the mortgage on a specific farm or residence. The terms, conditions, and collateral are specific to the case. The habit of referring to classes of heterogeneous negotiated transactions as "markets" is metaphorical, like the use of the term "labor market" to refer to the decentralized processes by which wages are set and jobs are filled, or "computer market" to describe the pricing and selling of a host of differentiated products. In these cases the economists' faith is that the outcomes are "as if" the transactions occurred in perfect organized auction markets.

Financial Enterprises and Their Markets

Financial intermediaries (FI) are enterprises in the business of buying and selling financial assets. The accounting balance sheet of an FI is virtually 100 percent paper on both sides. The typical FI owns relatively little real property, just the structures, equipment, and materials necessary to its business. The equity of the owners, or the equivalent capital reserve account for mutual, cooperative, nonprofit, or public institutions, is small compared to the enterprises' financial obligations.

FI are major participants in organized financial markets. They take large asset positions in market instruments; their equities and some of their liabilities, certificates of deposit or debt securities, are traded in those markets. They are not just middlemen like dealers and brokers whose main business is to execute transactions for clients.

FI are the principal makers of the informal financial markets discussed

above. Banks and savings institutions hold mortgages, commercial loans, and consumer credit; their liabilities are mainly checking accounts, savings deposits, and certificates of deposit. Insurance companies and pension funds negotiate private placements of corporate bonds and commercial mortgages; their liabilities are contracts with policy-holders and obligations to future retirees. Thus FI do much more than participate in organized markets. If FI confined themselves to repackaging open market securities for the convenience of their creditors, they would be much less significant actors on the economic scene.

Financial businesses seek customers, both lenders and borrowers, not only by interest rate competition but by differentiating and advertising their "products." Financial products are easy to differentiate, by variations in maturities, fees, auxiliary services, office locations and hours of business, and many other features. As might be expected, non-price competition is especially active when prices, in this case interest rates, are fixed by regulation or by tacit or explicit collusion. But the industry is by the heterogeneous nature of its products monopolistically competitive; non-price competition flourishes even when interest rates are free to move. The industry shows symptoms of "wastes of monopolistic competition." Retail offices of banks and savings institutions cluster like competing gasoline stations. Much claimed product differentiation is trivial and atmospheric, emphasized and exaggerated in advertising.

FI cultivate long-term relationships with customers. Even in the highly decentralized financial system of the United States, local FI have some monopoly power, some clienteles who will stay with them even if their interest rates are somewhat less favorable than those elsewhere. Since much

business is bilaterally negotiated, there are ample opportunities for price discrimination. The typical business customer of a bank is both a borrower and a depositor, often simultaneously. The customer "earns" the right for credit accommodation when he needs it by lending surplus funds to the same bank when he has them. The same reciprocity occurs between credit unions and mutual savings institutions and some of their members. Close ties frequently develop between an FI and nonfinancial businesses whose sales depend on availability of credit to their customers, for example between automobile dealers and banks. Likewise, builders and realtors have founded and controlled many savings and loan associations in order to facilitate mortgage lending to home buyers.

FI balance the credit demands they face with their available funds by adjusting not only interest rates but also the other terms of loans. They also engage in quantitative rationing, the degree of stringency varying with the availability and costs of funds to the intermediary. Rationing occurs naturally as a by-product of lending decisions made and negotiated case by case. Most such loans require collateral, and the amount and quality of the collateral can be adjusted both to individual circumstances and to overall market conditions. Borrowers are classified as to riskiness and charged rates that vary with their classification.

United States commercial banks follow the "prime rate convention." One or another of the large banks acts as price leader and sets a rate on six-month commercial loans for its prime quality borrowers. If other large banks agree, as is usually the case, they follow, and the rate becomes standard for the whole industry until one of the leading banks decides another change is needed to stay in line with open-market interest rates. Loan customers

are rated by the number of half-points above prime at which they will be accommodated. Of course, some applicants for credit are just turned away. One mechanism of short-term adjustment to credit market conditions is to stiffen or relax the risk classifications of customers, likewise to deny credit to more or fewer applicants. Similar mechanisms for rationing help to equate demands to supplies of home mortgage finance and consumer credit.

The Functions of Financial Markets and Intermediary Institutions

Intermediation, as defined and described above, converts the outside privately owned wealth of the economy into the quite different forms in which its ultimate owners hold their accumulated savings. Financial markets alone accomplish considerable intermediation, just by facilitating the origination and exchange of inside assets. FI greatly extend the process, adding "markets" that would not exist without them, and participating along with other agents in other markets, organized or informal.

What economic functions does intermediation in general perform? What do inside markets add to markets in the basic outside assets? What functions does institutional intermediation by FI perform beyond those of open markets in financial instruments? Economists characteristically impose on themselves questions like these, which do not seem problematic to lay practitioners. Economists start from the presumption that financial activities are epiphenomena, that they create a veil obscuring to superficial observers an underlying reality they do not affect. The celebrated Modigliani-Miller theorem (1958), generalized beyond the original intent of the authors, says so. With its help the sophisticated economist can pierce the veil and see that the values of financial assets are just those of the outside assets to

which they are ultimately claims, no matter how circuitous the path from the one to the other.

However, economists also understand how the availability of certain markets alters, usually for the better, the outcomes prevailing in their absence. For a primitive illustration, consider the functions of inside loan markets as brilliantly described by Irving Fisher (1930). Each household has an inter-temporal utility function in consumptions today and at future times, a sequence of what we now would call dated "endowments" of consumption, and an individual "backyard" production function by which consumption less than endowment at any one date can be transformed into consumption above endowment at another date. Absent the possibility of intertemporal trades with others, each household has to do its best on its own; its best will be to equate its marginal rate of substitution in utility between any two dates with its marginal rate of transformation in production between the same dates, with the usual amendments for corner solutions. The gains from trade, i.e., in this case from auction markets in inter-household lending and borrowing, arise from differences among households in those autarchic rates of substitution and transformation. They are qualitatively the same as those from free contemporaneous trade in commodities between agents or nations.

The introduction of consumer loans in this Fisherian model will alter the individual and aggregate paths of consumption and saving. It is not possible to say whether it will raise or lower the aggregate amount of capital, here in the sense of labor endowments in process of producing future rather than current consumable output. In either case it is likely to be a Pareto-optimal improvement, although even this is not guaranteed a

priori.

Similar argument suggests several reasons why ultimate savers, lenders, creditors prefer the liabilities of FI not only to direct ownership of real property but also to the direct debt and equity issues of investors, borrowers, debtors:

Convenience of denomination. Issuers of securities find it costly to cut their issues into the variety of small and large denominations savers find convenient and commensurate to their means. The FI can break up large-denomination bonds and loans into amounts convenient to small savers, or combine debtors' obligations into large amounts convenient to the wealthy. Economies of scale and specialization in financial transactions enable FI to tailor assets and liabilities to the needs and preferences of both lenders and borrowers. This service is especially valuable for agents on both sides whose needs vary in amount continuously; they like deposit accounts and credit lines whose use they can vary at will on their own initiative.

Risk pooling, reduction, and allocation. The risks incident to economic activities take many forms. Some are nation-wide or world-wide -- wars and revolutions, shifts in international comparative advantage, government fiscal and monetary policies, prices and supplies of oil and other basic materials. Some are specific to particular enterprises and technologies -- the capacity and integrity of managers, the qualities of new products, the local weather. An FI can specialize in the appraisal of risks, especially specific risks, with expertise in the gathering and interpretation of information costly or unavailable to individual savers. By pooling the funds of its creditors, the FI can diversify away risks to an extent that the individual creditors cannot, because of the costs of transactions as well as

the inconvenience of fixed lumpy denominations.

According to Joseph Schumpeter (1911/1934, pp. 72-74), bankers are the gatekeepers -- Schumpeter's word is "ephor" -- of capitalist economic development; their strategic function is to screen potential innovators and advance the necessary purchasing power to the most promising. They are the source of purchasing power for investment and innovation, beyond the savings accumulated from past economic development. In practice, the cachet of a banker often enables his customer also to obtain credit from other sources or to float paper in open markets.

Maturity shifting. An FI typically reconciles differences among borrowers and lenders in the timing of payments. Bank depositors want to commit funds for shorter times than borrowers want to have them. Business borrowers need credit to bridge the time gap between the inputs to profitable production and their output and sales. This source of bank business is formally modeled by Diamond and Dybvig (1983). The bank's scale of operations enables it to stagger the due dates of, say, half-year loans so as to accommodate depositors who want their money back in three months or one month or on demand. The reverse maturity shift may occur in other FI. An insurance company or pension fund might invest short-term the savings its policy-owners or future pensioners will not claim for many years.

Transforming illiquid assets into liquid liabilities. Liquidity is a matter of degree. A perfectly liquid asset may be defined as one whose full present value can be realized, i.e., turned into purchasing power over goods and services, immediately. Dollar bills are perfectly liquid, and so for practical purposes are demand deposits and other deposits transferable to third parties by check or wire. Liquidity in this sense does not necessarily

mean predictability of value. Securities traded on well organized markets are liquid. Any person selling at a given time will get the same price whether he decided and prepared to sell a month before or on the spur of the moment. But the price itself can vary unpredictably from minute to minute. Contrast a house, neither fully liquid nor predictable in value. Its selling proceeds at this moment are likely to be greater the longer it has been on the market. Consider the six-month promissory note of a small business proprietor known only to his local banker. However sure the payment on the scheduled date, the note may not be marketable at all. If the lender wants to realize its value before maturity, he will have to find a buyer and negotiate. An FI holds illiquid assets while its liabilities are liquid, and holds assets unpredictable in value while it guarantees the value of its liabilities. This is the traditional business of commercial banks, and the reason for the strong and durable relations of banks and their customers.

Substitution of Inside for Outside Assets

What determines the aggregate liabilities and assets of FI? What determines the gross aggregate of inside assets generated by financial markets in general, including open markets as well as FI? How can the empirical regularities found by Goldsmith, cited above, be explained?

Economic theory offers no answers to these questions. The differences among agents that invite mutually beneficial transactions, like those discussed above, offer opportunities for inside markets. Theory can tell us little a priori about the size of such differences. Moreover, markets are costly to operate, whether they are organized auction markets in homogeneous instruments or the imperfect "markets" in heterogeneous contracts in which

FI are major participants. Society cannot afford all the markets that might exist in the absence of transactions costs and other frictions, and theory has little to say on which will arise and survive.

The macroeconomic consequence of inside markets and FI is generally to provide substitutes for outside assets and thus to economize their supplies. That is, the same macroeconomic outcomes are achievable with smaller supplies of one or more of the outside assets than in the absence of intermediation. The way in which intermediation mobilizes the surpluses of some agents to finance the deficits of others is the theme of the classic influential work of Gurley and Shaw (1960).

Consider, for example, how commercial banking diminishes the need of business firms for net worth invested in inventories, by channeling the seasonal cash surpluses of some firms to the contemporaneous seasonal deficits of others. Imagine two firms A and B with opposite and complementary seasonal zigzag patterns. A needs \$2 in cash at time zero to buy inputs for production in period 1 sold for \$2 in period 2; the pattern repeats in 3, 4, ... B needs \$2 in cash at time 1 to buy inputs for production in period 2 sold for \$2 in period 3, and so on in 4, 5, ... In the absence of their commercial bank, A and B each need \$2 of net worth to carry on business; from period to period each alternates holding it in cash and in goods-in-process. Between them the two firms always are holding \$2 of currency and \$2 of inventories. Enters the bank and lends A half the \$2 he needs to carry his inventory in period 1; A repays the loan from sales proceeds the next period, 2; the bank now lends \$1 to B, A and B now need only \$1 of currency; each has on average net worth of \$1.50 -- \$2 and \$1 alternating; as before they are together always holding \$2 of

inventories. Moreover, with a steady deposit of \$2 from a third party, the bank could finance both businesses completely; they would need no net worth of their own. The example is trivial, but commercial banking proper can be understood as circulation of deposits and loans among businesses and as a revolving fund assembled from other sources and lent to businesses.

As a second primitive example, consider the effects of introducing markets that enable risks to be borne by those households more prepared to take them. Suppose that of two primary outside assets, currency and tangible capital, the return on the latter has the greater variance. Individuals who are risk neutral will hold all their wealth (possibly excepting minimal transactions balances of currency) in capital as long as its expected return exceeds the expected real return on currency. If these more adventurous households are not numerous and wealthy enough to absorb all the capital, the expected return on capital will have to exceed that on currency enough to induce risk-averse wealth-owners to hold the remainder. In this equilibrium the money price of capital and its mean real return are determined so as to allocate the two assets between the two kinds of households. Now suppose that the risk-neutral households can borrow from the risk-averse types, most realistically via FI, and that the latter households regard those debts as close substitutes for currency, indeed as inside money if intermediation by FI is involved. The inside assets do double duty, providing the services and security of money to those who value them while enabling the more adventurous to hold capital in excess of their own net worth. As a result, the private sector as a whole will want to hold a larger proportion of its wealth in capital at any given expected real return on capital. In equilibrium, the aggregate capital stock will be larger and its

expected return, equal to its marginal productivity in a steady state, will be lower than in the absence of intermediation.

Intermediation can diminish the private sector's need not just for outside money but for net worth and tangible capital. These economies generally require financial markets in which FI are major participants, because they involve heterogeneous credit instruments and risk pooling. In the absence of home mortgages, consumer credit, and personal loans for education, young households would not be able to spend their future wages and salaries until they receive them. Constraints on borrowing against future earnings make the age-weighted average net non-human wealth of the population greater, but the relaxation of such liquidity constraints increases household welfare. FI invest the savings of older and more affluent households in loans to their younger and less wealthy contemporaries; otherwise those savings would go into outside assets. Likewise insurance makes it unnecessary to accumulate savings as precaution against certain risks, for example the living and medical expenses of unusual longevity. It is an all too common fallacy to assume that arrangements that increase aggregate savings and tangible wealth always augment social welfare.

Deposit Creation and Reserve Requirements

The substitution of inside money for outside money is the familiar story of deposit creation, in which the banking system turns a dollar of base or "high-powered" money into several dollars of deposits. The extra dollars are inside or "low-powered" money. The banks need to hold only a fraction k , set by law or convention or prudence, of their deposit

liabilities as reserves in base money. In an equilibrium in which they hold no excess reserves their deposits will be a multiple $1/k$ of their reserves; they will have created $(1-k)/k$ dollars of substitute money.

A key step in this process is that any bank with excess reserves makes a roughly equal amount of additional loans, crediting the borrowers with deposits. As the borrowers draw checks, these new deposits are transferred to other accounts, most likely in other banks. As deposits move to other banks, so do reserves, dollar for dollar. But now those banks have excess reserves and act in like manner. The process continues until all banks are "loaned up," i.e. deposits have increased enough so that the initial excess reserves have become reserves that the banks require or desire.

The textbook fable of deposit creation does not do justice to the full macroeconomics of the process. The story is incomplete without explaining how the public is induced to borrow more and to hold more deposits. The borrowers and the depositors are not the same public. No one borrows at interest in order to hold idle deposits. To attract additional borrowers, banks must lower interest rates or relax their collateral requirements or their risk standards. The new borrowers are likely to be businesses that need bank credit to build up inventories of materials or goods in process. The loans lead quickly to additional production and economic activity. Or banks buy securities in the open market, raising their prices and lowering market interest rates. The lower market rates may encourage businesses to float issues of commercial paper, bonds, or stocks, but the effects on investment in inventories or plant and equipment are less immediate and less potent than the extension of bank credit to a business otherwise held back by illiquidity. In either case, lower interest rates induce other members of

the public, those who indirectly receive the loan disbursements or those who sell securities to banks, to hold additional deposits. They will be acquiring other assets as well, some in banks, some in other FI, some in open financial markets. Lower interest rates may also induce banks themselves to hold extra excess reserves.

Interest rates are not the only variables of adjustment. Nominal incomes are rising at the same time, in some mixture of real quantities and prices depending on macroeconomic circumstances. The rise in incomes and economic activities create new needs for transactions balances of money. Thus the process by which excess reserves are absorbed entails changes in interest rates, real economic activity, and prices in some combination. It is possible to describe scenarios in which the entire ultimate adjustment is in one of these variables. Wicksell's cumulative credit expansion, which in the end just raises prices, is a classic example.

Do banks have a unique magic by which asset purchases generate their own financing? Is the magic due to the "moneyness" of the banks' liabilities? The preceding account indicates it is not magic but reserve requirements. Moreover, a qualitatively similar story could be told if reserve requirements were related to bank assets or non-monetary liabilities and even if banks happened to have no monetary liabilities at all. In the absence of reserve requirements aggregate bank assets and liabilities, relative to the size of the economy, would be naturally limited by public supplies and demands at interest rates that cover banks' costs and normal profits. If, instead of banks, savings institutions specializing in mortgage lending were subject to reserve requirements, their incentives to minimize excess reserves would inspire a story telling how additional mortgage

lending brings home savings deposits to match. (Tobin, 1963)

Risks, Runs, and Regulations

Some FI confine themselves to activities that entail virtually no risk either to the institution itself or to its clients. An open-end mutual fund or unit trust holds only fully liquid assets traded continuously in organized markets. It promises the owners of its shares payment on demand at their pro rata net value calculated at the market prices of the underlying assets -- no more, no less. The fund can always meet such demands by selling assets it holds. The shareowners pay in one way or another an agreed fee for the services of the fund -- the convenience and flexibility of denomination, the bookkeeping, the transactions costs, the diversification, the expertise in choosing assets. The shareowners bear the market risks on the fund's portfolio -- no less and, assuming the fund is honest, no more. Government regulations are largely confined to those governing all public security issues, designed to protect buyers from deceptions and insider manipulations. In the United States regulation of this kind is the province of the federal Securities and Exchange Commission.

Most FI do take risks. The risks are intrinsic to the functions they serve and to the profit opportunities attracting financial entrepreneurs and investors in their enterprises. For banks and similar FI, the principal risk is that depositors may at any time demand payments the institution can meet, if at all, only at extraordinary cost. Many of the assets are illiquid, unmarketable. Others can be liquidated at short notice only at substantial loss. In some cases, bad luck or imprudent management brings insolvency; the institution could never meet its obligations no matter how long its

depositors and other creditors wait. In other cases, the problem is just illiquidity; the assets would suffice if they could be held until maturity, until buyers or lenders could be found, or until normal market conditions returned.

Banks and other FI hold reserves, in currency or its equivalent, deposits in central banks, or in other liquid forms as precaution against withdrawals by their depositors. For a single bank, the withdrawal is usually a shift of deposits to other banks or FI, arising from a negative balance in interbank clearings of checks or other transfers to third parties at the initiative of depositors. For the banking system as a whole, withdrawal is a shift by the public from deposits to currency.

"Withdrawals" may in practice include the exercise of previously agreed borrowing rights. Automatic overdraft privileges are more common in other countries, notably the United Kingdom and British Commonwealth nations, than in the United States. They are becoming more frequent in the U. S. as an adjunct of bank credit cards. Banks' business loan customers often have explicit or implicit credit lines on which they can draw on demand.

Unless FI hold safe liquid assets of predictable value matched in maturities to their liabilities -- in particular, currency or equivalent against all their demand obligations -- they and their creditors can never be completely protected from withdrawals. The same is true of the banking system as a whole, and of all intermediaries other than simple mutual funds. "Runs," sudden, massive, and contagious withdrawals, are always possible. They destroy prudent and imprudent institutions alike, along with their depositors and creditors. Of course, careful depositors inform themselves about the intermediaries to which they entrust their funds, about their

asset portfolios, policies, and skills. Their choices among competing depositories provide some discipline, but it can never be enough to rule out disasters. What the most careful depositor cannot foresee is the behavior of other depositors, and it is rational for the well-informed depositor of a sound bank to withdraw funds if he believes that others are doing so or are about to do so.

Governments generally regulate the activities of banks and other FI in greater detail than they do nonfinancial enterprises. The basic motivations for regulation appear to be the following:

It is costly, perhaps impossible, for individual depositors to appraise the soundness and liquidity of financial institutions and to estimate the probabilities of failures even if they could assume that other depositors would do likewise. It is impossible for them to estimate the probabilities of "runs." Without regulation, the liabilities of suspect institutions would be valued below par in check collections. Prior to 1866 banks in the United States were allowed to issue notes payable to bearers on demand, surrogates for government currency. The notes circulated at discounts varying with the current reputations of the issuers. A system in which transactions media other than government currency continuously vary in value depending on the issuer is clumsy and costly.

The government has an obligation to provide at low social cost an efficient system of transactions media, and also a menu of secure and convenient assets for citizens who wish to save in the national monetary unit of account. Those transactions media and savings assets can be offered by banks and other FI, in a way that retains most of the efficiencies of decentralization and competition, if and only if government imposes some

regulations and assumes some residual responsibilities. The government's role takes several forms.

Reserve requirements. An early and obvious intervention was to require banks to hold reserves in designated safe and liquid forms against their obligations, especially their demand liabilities. Left to themselves, without such requirements, some banks might sacrifice prudence for short-term profit. Paradoxically, however, required reserves are not available for meeting withdrawals unless the required ratio is 100 percent. If the reserve requirement is 10 percent of deposits, then withdrawal of one dollar from a bank reduces its reserve holdings by one dollar but its reserve requirement by only ten cents. Only excess reserves or other liquid assets are precautions against withdrawals. The legal reserve requirement just shifts the bank's prudential calculation to the size of these secondary reserves. Reserve requirements serve functions quite different from their original motivation. In the systems that use them, notably the United States, they are the fulcrum for central bank control of economy-wide monetary conditions. (They are also an interest-free source of finance of government debt, but in the United States today this amounts to only \$45 billion of a total debt to the public of \$1700 billion.)

Last-resort lending. Banks and other FI facing temporary shortages of reserves and secondary reserves of liquid assets can borrow them from other institutions. In the United States, for example, the well-organized market for "federal funds" allows banks short of reserves to borrow them overnight from other banks. Or banks can gain reserves by attracting more deposits, offering higher interest rates on them than depositors are getting elsewhere. These ways of correcting reserve positions are not available to

troubled banks, suspected of deep-rooted problems of liquidity or solvency or both, for example bad loans. Nor will they meet a system-wide run from liabilities of banks and other FI into currency.

Banks in need of reserves can also borrow from the central bank, and much of this borrowing is routine, temporary, and seasonal. Massive central bank credit is the last resort of troubled banks which cannot otherwise satisfy the demands of their depositors without forced liquidations of their assets. The government is the ultimate supplier of currency and reserves in aggregate. The primary raison d'être of the central bank is to protect the economy from runs into currency. System-wide shortages of currency and reserves can be relieved not only by central bank lending to individual banks but by central bank purchases of securities in the open market. The Federal Reserve's inability or unwillingness -- which it was is still debated -- to supply the currency bank depositors wanted in the early 1930s led to disastrous panic and epidemic bank failures. No legal or doctrinal obstacles would now stand in the way of such a rescue.

Deposit insurance. Federal insurance of bank deposits in the United States has effectively prevented contagious runs and epidemic failures since its enactment in 1935. Similar insurance applies to deposits in savings institutions. In effect, the federal government assumes a contingent residual liability to pay the insured deposits in full, even if the assets of the FI are permanently inadequate to do so. The insured institutions are charged premiums for the service, but the fund in which they are accumulated is not and cannot be large enough to eliminate possible calls on the Treasury. Although the guarantees are legally limited to a certain amount, now \$100,000, per account, in practice depositors have eventually recovered

their full deposits in most cases. Indeed the guarantee seems now to have been extended de facto to all deposits, at least in major banks.

Deposit insurance impairs such discipline as surveillance by large depositors might impose on FI; instead the task of surveillance falls on the governmental insurance agencies themselves (in the United States the Federal Deposit Insurance Corporation and the Federal Savings and Loan Insurance Corporation) and on other regulatory authorities (the United States Comptroller of the Currency, the Federal Reserve, and various state agencies.) Insurance transfers some risks from FI depositors and owners to taxpayers at large, while virtually eliminating risks of runs. Those are risks we generate ourselves; they magnify the unavoidable natural risks of economic life. Insurance is a mutual compact to enable us to refrain from sauve qui peut behavior that can inflict grave damage on us all. Formally, an uninsured system has two equilibria, a good one with mutual confidence and a bad one with runs. Deposit insurance eliminates the bad one. (Diamond and Dybvig, 1983).

One hundred percent reserve deposits would, of course, be perfectly safe -- that is, as safe as the national currency -- and would not have to be insured. Those deposits would in effect be currency, but in a secure and conveniently checkable form. One can imagine a system in which banks and other FI offered such accounts, with the reserves behind them segregated from those related to the other business of the institution. That other business would include receiving deposits which required fractional or zero reserves and were insured only partially, if at all. The costs of the 100 percent reserve deposit accounts would be met by service charges, or by government interest payments on the reserves, justified by the social

benefits of a safe and efficient transactions medium. The burden of risk and supervision now placed on the insuring and regulating agencies would be greatly relieved. It is, after all, historical accident that supplies of transactions media in modern economies came to be byproducts of banking business and vulnerable to its risks.

Government may insure FI loans as well as deposits. Insurance of home mortgages in the United States not only has protected the institutions that hold them and their depositors but has converted the insured mortgages into marketable instruments.

Balance sheet supervision. Government surveillance of FI limits their freedom of choice of assets and liabilities, in order to limit the risks to depositors and insurers. Standards of adequacy of capital -- owners' equity at risk in the case of private corporations, net worth in the case of mutual and other nonprofit forms of organization -- are enforced for the same reason. Periodic examinations check the condition of the institution, the quality of its loans, and the accuracy of its accounting statements. The regulators may close an institution if further operation is judged to be damaging to the interests of the depositors and the insurer.

Legislation which regulates FI has differentiated them by purpose and function. Commercial banks, savings institutions, home building societies, credit unions, and insurance companies are legally organized for different purposes. They are subject to different rules governing the nature of their assets. For example, home building societies -- savings and loan associations in the United States -- have been required to keep most of their asset portfolios in residential mortgages. Restrictions of this kind mean that when the wealth-owners shift funds from one type of FI to another,

they alter relative demands for assets of different kinds. Shifts of deposits from commercial banks to building societies would increase mortgage lending relative to commercial lending. Regulations have also restricted the kinds of liabilities allowed various types of FI. Until recently in the United States, only banks were permitted to have liabilities payable on demand to third parties by check or wire. Currently deregulation is relaxing specialized restrictions on FI assets and liabilities and blurring historical distinctions of purpose and function.

Interest ceilings. Government regulations in many countries set ceilings on the interest rates that can be charged on loans and on the rates that can be paid on deposits, both at banks and at other FI. In the United States the Banking Act of 1935 prohibited payment of interest on demand deposits. After the second world war effective ceilings on savings and time deposits in banks and savings institutions were administratively set, and on occasion changed, by federal agencies. Under legislation of 1980, these regulations are being phased out.

The operating characteristics of a system of FI in which interest rates on deposits of various types, as well as on loans, are set by free competition are quite different from those of a system in which FI rates are subject to legal ceilings or central bank guidance, or set by agreement among a small number of institutions. For example, when rates on deposits are administratively set, funds flow out of FI when open market rates rise and return to FI when they fall. These processes of "disintermediation" and "re-intermediation" are diminished when FI rates are free to move parallel to open market rates. Likewise flows between different financial intermediaries due to administratively set rate differences among them are

reduced when they are all free to compete for funds.

A regime with market-determined interest rates on moneys and near-moneys has significantly different macroeconomic characteristics from a regime constrained by ceilings on deposit interest rates. Since the opportunity cost of holding deposits is largely independent of the general level of interest rates, the "LM" curve is steeper in the unregulated regime. Both central bank operations and exogenous monetary shocks could be expected to have larger effects on nominal income, while fiscal measures and other shocks to aggregate demand for goods and services would have smaller effects. (Tobin, 1983).

Entry, branching, merging. Entry into regulated financial businesses is generally controlled, as are establishing branches or subsidiaries and merging of existing institutions. In the United States, charters are issued either by the federal government or by state governments, and regulatory powers are also divided. Until recently banks and savings institutions, no matter by whom chartered, were not allowed to operate in more than one state. This rule, combined with various restrictions on branches within states, gave the United States a much larger number of distinct financial enterprises, many of them very small and very local, than is typical in other countries. The prohibition of interstate operations is now being eroded and may be effectively eliminated in the next few years.

Deregulation has been forced by innovations in financial technology that made old regulations either easy hurdles to circumvent or obsolete barriers to efficiency. New opportunities not only are breaking down the walls separating financial intermediaries of different types and specializations. They are also bringing other businesses, both financial and

nonfinancial, into activities previously reserved to regulated financial institutions. Mutual funds and brokers offer accounts from which funds can be withdrawn on demand or transferred to third parties by check or wire. National retail chains are becoming financial supermarkets -- offering credit cards, various mutual funds, installment lending, and insurance along with their vast menus of consumer goods and services; in effect, they would like to become full-service financial intermediaries. At the same time, the traditional intermediaries are moving, as fast as they can obtain government permission, into lines of business from which they have been excluded. Only time will tell how these commercial and political conflicts are resolved and how the financial system will be reshaped. (Economic Report of the President, 1985, Chapter 5).

Portfolio Behavior of Financial Intermediaries

A large literature has attempted to estimate econometrically the choices of assets and liabilities by financial intermediaries, their relationships to open market interest rates and to other variables exogenous to them. Models of the portfolio behavior of the various species of FI also involve estimation of the supplies of funds to them, and the demands for credit, from other sectors of the economy, particularly households and nonfinancial businesses. Recent research is presented in (Dewald and Friedman, 1980).

Difficult econometric problems arise in using time series for these purposes because of regime changes. For example, when deposit interest rate ceilings are effective, FI are quantity-takers in the deposit markets; when the ceilings are non-constraining or non-existent, both the interest rates

and the quantities are determined jointly by the schedules of supplies of deposits by the public and of demands for them by the FI. Similar problems arise in credit markets where interest rates, even though unregulated, are administered by FI themselves and move sluggishly. The prime commercial loan rate is one case; mortgage rates in various periods are another. In these cases and others, the markets are not cleared at the established rates. Either the FI or the borrowers are quantity-takers, or perhaps both in some proportions. Changes in the rates follow, dependent on the amount of excess demand or supply. These problems of modeling and econometric estimation are discussed in papers in the reference above. The seminal paper is (Modigliani and Jaffee, 1969).

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