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The history of the financing of the American corporation has many aspects: changes in the relative importance of particular contracting forms (such as debt vs. equity) as sources of funds; shifts in the relative use of retained earnings vs. external finance; and changes in the relative importance of lending by commercial banks or similar intermediaries (sometimes referred to as “inside” or private lending) vs. financing by public markets. The evolution of U.S. corporate finance along these dimensions is the history of alternating expansions and contractions of the range of possible relationships between corporations and particular intermediaries. Such continuous shifts in relationships can be viewed as collective attempts by companies and intermediaries to minimize the cost of finance in response to changes in technology and, most important, in the legal and regulatory environment.

One insight offered by this historical overview is that virtually every financial transaction involves some kind of intermediary and, thus, a “relationship.” Indeed, the distinction between raising capital through intermediaries and going directly to “the market” is a false dichotomy. The issuance of public securities requires intermediaries such as investment bankers or commercial paper dealers to perform services similar to those provided by banks when making loans, or by life insurance companies when originating private placements, or by venture capitalists when raising private equity. Each of these intermediaries can be seen as providing a different mechanism for solving a combination of problems that confront firms when attempting to raise capital.

The American corporate financing system, unlike that of most other countries, has not been organized around a set of “universal banks” that perform a variety of functions for their clients. Indeed, the single feature that distinguishes American financial history from that of other countries is the number and variety of financial intermediaries and their independence from one another. And, as we argue in this paper, it is the changing menu of such intermediaries and their relationships with corporations (and with one another) that has been the driving force behind the evolution of American corporate finance.

In the pages that follow, we view U.S. financial history as a series of institutional and financial innovations designed in large part to work around costly restrictions on relationships—particularly, limits on the size and activities of U.S. banks—that are not faced by corporations in most other countries. Notable among such innovations are new financial claims like preferred stock and commercial paper, and new intermediaries like venture capitalists and commercial paper houses. But also important are new forms of cooperation among intermediaries—especially among banks, venture capitalists, trusts, pensions, and investment banks—that enable them to provide some of the key advantages of universal banking systems. Some of the largest U.S. commercial banks today can be viewed as positioning themselves to play a central coordinating role in these new coalitions of intermediaries. To the extent they succeed, such banks may become the platform for a distinctively American universal banking system.

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As we also suggest, such a view of the future of U.S. commercial banking contrasts sharply with popular predictions that “transactional” finance will all but supplant relationship banking. Although technological advances may have worked profound changes in corporate financing by allowing many firms more direct access to public markets, computers have not repealed the laws of economics. They have not provided a magical solution to creditors’ traditional problems of monitoring and controlling the behavior of owners, or to stockholders’ problems of controlling managers. Nor have they fundamentally altered the fact that, for the vast majority of firms, corporate finance is still based upon relationships of one kind or another.

What’s more, computers and technology may actually now be helping to push the American financial system *toward* a new form of universal banking. By expanding the menu of financial services that a single intermediary can provide, technological progress may end up strengthening rather than severing long-term relationships between clients and their intermediaries.

FINANCE THEORY: THE MENU OF INTERMEDIARY RELATIONSHIPS

Financial Frictions and the Role of Intermediaries

What would prevent a corporation with a value-increasing project from being able to secure financing? Four broad categories of frictions, or sources of “costs,” can prevent efficient capital allocation from taking place.

First are *information costs*. Suppliers of funds may not be able to identify “good” firms—that is, companies with value-increasing projects. If so, “bad” firms may have an incentive to pretend to be good firms. The difficulty of distinguishing good from bad firms raises the cost of borrowing for good firms and may even lead to a collapse of the market for funds to the pooled class of firms.¹

Second are *control costs*. Even if all firms seeking to raise funds do have value-increasing projects, managers may not have the necessary

incentives to invest in those projects once they have received funding. For example, managers with little equity ownership may have incentives to choose value-*reducing* projects—say, an acquisition that increases the size of the firm in order to increase the managers’ prestige or compensation or job security. Debt contracts tend to constrain such managerial behavior more effectively than, say, common equity because failure to make debt payments can trigger a formal mechanism—Chapter 11—that is capable of wresting control of the firm from managers.

On the other hand, managers of highly leveraged companies acting in the interests of their shareholders may have incentives to turn down value-increasing projects because of pressure to meet debt service. Or, like a number of owners of now-defunct savings and loans, managers in thinly capitalized firms may even find it in their interest to choose riskier, *value-reducing* projects as a result of the incentives created by the contract between creditors and the firm. In such cases, debt contracts (by giving the debtholders much of the downside risk but no upside participation) can provide managers with incentives to bet the ranch on high-risk projects with low-probability, but potentially very large, payoffs to shareholders.²

Third is a class of control costs that we will call *monitoring costs*. Even if there is sufficient information about the company and the investment choices of managers can be controlled easily by suppliers of funds, managers may be able to exploit the fact that it is costly to verify the outcome of the investment on which the financial claims of suppliers are based.³ Consider the case of income bonds or preferred stock, where the coupon payment or dividend can be waived if reported net income is insufficient. In such a case, managers may try to “hide” profits to reduce the profit-contingent payments they have promised suppliers of funds. Recognizing such incentives, suppliers of funds cannot trust the reports of managers, and will have to invest in “costly state verification”—that is, a court audit or bankruptcy proceeding to verify outcomes. Ordinary debt contracts effectively reduce such *monitoring costs* by reducing the number of states of the world in which

1. See Stiglitz and Weiss (1981), Myers and Majluf (1984), and Calomiris and Hubbard (1990). For full citations of all articles cited in footnotes or the text, see the references section at the end of the article.

2. The classic statements of these “agency” and “asset substitution” problems can be found in Jensen and Meckling (1976), Myers (1977), and Jensen (1986).

3. The connection between costly verification and debt was first noted in Townsend (1979).

verification must occur (only those in which the firm fails to make its promised payment).

Fourth and finally, market segmentation—due, for example, to natural boundaries that impose physical barriers between savers and investors—can prevent efficient transfers of funds from occurring, even in the absence of the problems of information and control discussed above. Moreover, such physical costs also imply related problems of information and control. To the extent that ultimate suppliers of funds are scattered and distant from ultimate users, information and control costs will be higher. Problems of market segmentation have been particularly severe in the U.S. because of its highly fragmented commercial banking system. Such segmentation has been reflected historically in substantial variation across locations in the cost of funds and the profits of corporations.

The role for intermediaries comes from the advantages of appointing specialists to transfer funds, screen applicants, monitor managerial performance and company profits, and design and enforce specific contractual covenants that discipline managers. Virtually every model of a “bank” has as one of its fundamental features some advantage from delegating decision-making to a specialist while at the same time ensuring that the “delegated monitor” faces incentives to behave appropriately. A useful definition of a viable financial intermediary is a financial agent that reduces *net* incentive and control problems—the sum of those that result from the frictions outlined above and those that are *introduced* as the result of the actions of the intermediary.

Why is it beneficial to use an intermediary? First and foremost, given the multiple suppliers of funds to any use, intermediaries avoid redundancy of screening, monitoring, and enforcement costs, and enjoy physical law-of-large-numbers economies in cash management (netting of transfers). Given transaction costs in securities markets, intermediaries also offer low-cost portfolio diversification. The concentration of claims in the hands of an intermediary also avoids coordination costs in the relationship between firms and their funds suppliers. For example, debt renegotiation costs are much lower when the number of parties to the renegotiation is small. Information costs and coordination costs are often related. If a banker has all or most of the outstanding debt of the firm, then it pays for the banker to invest more in monitoring the firm because the banker’s ability to make use of information is greater when he

can act with greater authority in an out-of-court renegotiation or a bankruptcy. Firms with large numbers of claimants can play one off against the other, and can reduce the benefit to any claimant of investing effort in monitoring the firm.

From the standpoint of a firm in need of funds, the menu of intermediaries and contracting forms offers alternative “mechanisms”—each represents a different answer to the question of how one might raise funds. And it is presumably the least costly mechanism that is chosen by the firm after taking account of and weighing the advantages and disadvantages of each potential relationship along a variety of dimensions. For example, some forms of intermediation cost more “up front” than others. Some intermediaries charge higher fees, or impose tighter restrictions on the firm’s behavior in the form of debt covenants, or create a powerful new outside stockholder with direct control over management—and these outside constraints may prevent some potentially profitable behavior. But these higher up-front costs may be warranted if the restrictions imply significant *contingent benefits* to the firm (such as lower costs of finance if earnings drop sharply in the future), or if other forms of finance are unavailable because of prohibitive incentive and control problems facing the firm.

For large, well-established companies with a wide range of choices about which form of intermediation or financing mechanism to use, choosing the lowest-cost mechanism requires consideration of different possible levels of future profitability, and of the benefits of each financing alternative under the different outcomes. For example, hiring an underwriter to place a widely held bond issue may offer the advantage of a higher price of debt (or larger amount of debt) than could be secured from a bank. But, if the firm ends up being unable to cover its interest expenses with current income, the costs of that distress (in the form of reduced investment and other disruptions) will likely be greater if its debt is held by public bondholders than by a small group of banks. The costs of financial distress are also likely to vary among different kinds of companies. Companies with few profitable investment opportunities, but valuable tangible asset holdings, should lose relatively little value in reorganization. And companies with clearly observable profitable investment opportunities should suffer less of a reduction in value in financial distress than firms whose opportunities are

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more difficult to communicate to outsiders. Thus, one possible interpretation of a firm's decision to use public debt as opposed to bank loans is that it perceives the probability and anticipated costs of financial distress to be low.

There are many other contingencies to consider when raising capital, and there are many more dimensions to corporate financing choices than the decision whether to use public debt or bank loans. For example, companies will be concerned about the implications of their financing relationships for the costs of finance under circumstances much less extreme than financial distress—say, if they should experience a sudden decline in earnings. Managers are aware that an unexpected drop in earnings can restrict their firm's access to funds on “economic” terms—and such constraints represent one of the potentially significant costs of external finance. Several studies have demonstrated the importance of internally generated funds in maintaining corporate investment during periods of reduced operating cash flow, and these studies have attributed their findings to the high costs of financing activity from external sources.⁴

For our purposes, what is most important about the potential costs of external finance is their connection to choices about financial relationships. From this perspective, two important points have been stressed in the literature. First, companies facing the greatest frictions in capital markets tend to rely more on close relationships with intermediaries. Some markets—notably, the public bond and commercial paper markets—are not accessible to all firms because of the prohibitive costs of financial frictions. Firms tend to progress through a financial “life cycle.” They begin with access only to a close-knit group of entrepreneurs. Over time they rely on lending from banks or venture capitalists, which retain close control over the firm. Later, as companies' prospects become a matter of common knowledge, and as their internal resources become larger relative to their funding needs, they tend to rely on “outside” sources of funds in public markets. At this stage, intermediaries take on the role of underwriters rather than suppliers of funds through loans or equity investments.

Second, a company's ability to raise funds during times when cash flow is low relative to investment opportunities depends heavily on whether it has a pre-existing financing relationship, and on the *strength* of that relationship. The uniqueness of bank lending relationships has been the subject of many recent studies of banking. Other bank-like intermediaries such as finance companies and life insurance companies also make loans that are similar to bank loans. They too can be thought of as “private” lenders with access to special information; and, like banks, they monitor and control the borrower's behavior through the verification and enforcement of covenants.⁵

Lest one be carried away by the wonders of “discipline,” it is worth bearing in mind that discipline also has its costs, which explains why it is not the preferred financing relationship for all firms. In Japan, for example, companies sometimes opt out of close bank relationships, and in so doing increase their potential reliance on high-cost sources of funds (public markets) if internal funds fall.⁶ Why would value-maximizing firms voluntarily increase their costs of raising external funds in the future? One simple explanation is that there are fixed costs to establishing and maintaining financing relationships—for example, the costs of designing and enforcing appropriate standards of behavior.

Another cost to buying discipline may be the inflexibility of the disciplinarian. For example, financial covenants are a form of regulation that could be viewed as a substitute for constant scrutiny of the firm. By establishing a set of easily verified covenants, the firm is able to reduce the costs charged by the intermediary for monitoring. Other covenants typically restrict the use of funds, as well as changes in the operations of the firm. Despite the obvious benefits of such covenants in reducing costs of control, they may be costly by limiting the flexibility of the firm to respond to changing circumstances. Thus, as companies reach the advanced stage of the financial life cycle and become seasoned credit risks with smaller relative reliance on external finance, the costs of strong relationships may be greater than the benefits, and such companies may accordingly choose to switch to financing relationships that involve weaker ties to intermediaries.

4. Such studies find that the higher the shadow cost of external finance (which reflects the extent to which firms are vulnerable to the various frictions mentioned above), the greater the sensitivity of investment to cash flow. See Fazzari, Hubbard, and Petersen (1988) and Calomiris and Hubbard (1995).

5. For empirical evidence of the value of banking relationships, see James (1987), Billett, Flannery, and Garfinkel (1995), Slovin, Sushka, and Polonchek (1992), and Hoshi, Kashyap, and Scharfstein (1990a, 1990b, 1991).

6. See Hoshi, Kashyap, and Scharfstein (1990b).

Intermediaries in Securities Markets

Intermediaries that specialize in the creation of insider debts of corporations—commercial banks, finance companies, and life insurance companies—are not the only intermediaries that develop beneficial relationships with firms. Although somewhat neglected by financial economists in the past, the role of investment bankers and institutional buyers of securities in facilitating the marketing of securities is now receiving more attention. Both the theoretical models of investment banking and empirical studies of the costs of securities flotations have emphasized the importance of investment bankers' reputations, information-and-sales networks, and long-term relationships in reducing financing costs. Relationships among investment bankers and their institutional buyers, and concentrations of shares (and voting power) in small numbers of investors (pensions, mutuals, and trusts) help to reduce issuing costs by reducing both information and corporate control problems.⁷

American Financial Fragmentation and Relationship Constraints

One of the most remarkable features of American finance—perhaps the single feature that has set American financial history apart from that of other countries—is the number and variety of intermediaries and their independence from one another. Unlike most other countries, the American corporate financing system is not organized around a set of “universal banks” performing a variety of functions for their clients.

We will argue that limits on the size and scope of banks in the U.S. have placed important constraints on the feasible menu of financing relationships of corporations. In the U.S. it has been harder to concentrate ownership of the financial claims on firms. The concentration of debt claims has been limited by the relatively small size of U.S. banks, which can be attributed to restrictions on branching and consolidation. Furthermore, intermediaries have been prohibited from involvement in selling, managing, and holding large equity interests in firms, sometimes by limitations on the size and geographic range of intermediaries, and sometimes by limits on

the equity-holding powers of intermediaries. Finally, government restrictions that forced intermediaries to specialize in particular functions have limited the beneficial combining of activities within the same intermediary.

In discussing the costs of prohibiting “universal banking” in the U.S., it is useful to consider the advantages that other countries have enjoyed from such a system. Universal banking takes different forms in different countries, and there is no clear agreement about its essential or defining characteristics. For our purposes, we define universal banks to be intermediaries with three sets of characteristics: (1) they operate large networks over a wide geographic range; (2) they provide customers with access to a wide scope of activities, including lending, underwriting, portfolio management, and deposit-taking; and (3) they are permitted to hold a variety of types of claims (e.g., debt and equity) on their corporate customers. In our historical discussion of the U.S., this definition will prove useful for distinguishing between the U.S. and German banking systems, and between “full-fledged” universal banking in Germany and the partial and sporadic attempts to concentrate and combine financial services that have occurred throughout U.S. history.

The benefits of universal banking can be divided into four categories.

- First, there are the simple benefits of concentration that come from allowing banks to be large—in particular, lower costs of coordination among claimants, thus strengthening the intermediary's incentives to screen, monitor, control, and negotiate with the firm efficiently.
- Second, there are information and network economies from combining various functions within the same intermediary. Intermediaries that can combine different functions can save on information and enforcement costs and on “brick and mortar” costs by spreading fixed costs over more transactions.
- Third, there are incentive and signaling benefits from combining activities. Providing a variety of services and holding various claims on a firm can strengthen the incentives of intermediaries to monitor and enforce properly, and can improve their ability to signal information to outsiders when marketing securities. A bank may find it easier and more desirable to monitor a borrower in which it

7. Theoretical models include Benveniste and Spindt (1989), Benveniste and Wilhelm (1990), and Chemmanur and Fulghieri (1994).

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maintains a junior stake. Also, it may be easier for a bank to underwrite equity of a company in which it maintains a stake. For example, if a bank holds (or controls for its trust customers) stock in a corporation, the bank stands to lose from managerial errors or misbehavior of that corporation. Potential buyers of equity are more likely to trust the opinion of a universal bank underwriter that is taking a junior stake in the firm whose shares are being sold, especially if the underwriter retains significant control of the firm after the issue.

■ Fourth, universal banking can promote low-cost diversification of the intermediary, and thereby reduce its cost of funds.⁸

From the perspective of these theoretical arguments, regulatory restrictions on the geographic range and scope of activities of intermediaries may have significantly raised the cost of financing for U.S. companies. Indeed, we will argue that such costly restrictions explain the peculiar history of the development of American financial intermediaries, and the high costs of industrial finance in the U.S.

In the next part of this paper, we describe the historical circumstances that gave rise to the peculiar constraints of American corporate finance, discuss the costs of those constraints on U.S. firms, and then consider the forces that changed those constraints over time. We argue that during its early history, the U.S. was able to develop a very efficient intermediation system, particularly in New England before the Civil War. In many respects, that system enjoyed the advantages of a universal banking system by virtue of the close ties among industrial borrowers, commercial banks, underwriters, and securities portfolio managers.

But that system of “insider finance” broke down by the 1890s in the face of restrictions on bank branching and consolidation and the expansion in the scale of industrial firms. Other limitations on bank involvement in boards of directors (the Clayton Act of 1914), and the forced separation of commercial and investment banking (the Glass-Steagall Act of 1933) further restricted intermediaries’ abilities to reap the gains outlined above.

The subsequent history of American financial intermediation—or the history of the menu of finan-

cial relationships available to corporations—can be described as the history of finding “second-best” solutions in the face of these restrictions. Such solutions included the creation of new intermediaries and new financial claims. Prominent among them were commercial paper houses helping firms to place commercial paper, insurance companies originating private placements, and pensions, mutuals, and venture capitalists participating in venture capital funds and investment banking syndicates. These financial developments involved new methods of cooperation among intermediaries—especially among venture capitalists, trusts, pensions, and investment bankers—that had some elements in common with early arrangements in New England and universal banking systems. Today commercial banks themselves have become involved in these new coalitions of intermediaries—and, through such involvement, the banks themselves may become the platform on which true American universal banks will be built.

AMERICAN CORPORATE FINANCE: A CHANGING MENU OF RELATIONSHIPS

Pseudo-Universal Banking in New England

New England banking and financial markets were the best developed in the early U.S., and recent empirical work has provided evidence of the relative efficiency of New England banks. Perhaps surprisingly, New England enjoyed a universal banking system of a sort long before “true” universal banking was established in Germany in the last three decades of the 19th century. The relationship between the non-bank corporation and the bank remained the focus of the corporation’s financial relationship, but that relationship became increasingly complex, and involved securities flotations and investments by related intermediaries (such as savings banks), as well as funding by commercial banks.⁹

During the first half of the 19th century leading up to the Civil War (the “antebellum” period), New England’s banks were a primary source of funding for New England industrialists. The links between industry and banking in New England were very

8. Two studies have argued from the evidence of limited universal banking in the U.S. (current as well as historical) that universal banks are better able to diversify because the incomes from the various services they offer are not highly correlated. Eugene White (1986) and Elijah Brewer (1989)

9. Calomiris and Kahn (1996) argue for the relative efficiency of New England banks. Davis (1957, 1960) and Lamoreaux (1991a, 1994) provide detailed analyses of the links between New England banks and industrial enterprises.

close, and the banks were closely affiliated with other financial institutions that underwrote securities issues and managed securities portfolios. The banks were chartered to provide credit to their industrialist founders. In many cases, the officers and directors of the banks were their principal borrowers.

The stock of antebellum New England banks—like that of German universal banks, but unlike U.S. banks later in the 19th century—was widely issued. New England banks were able to attract large numbers of outside stockholders and pay lower returns on equity than other banks because their institutional arrangements helped to control information problems. Each bank's borrower-insiders had strong incentives to monitor one another to ensure the continuation of the flow of credit to their own enterprises in the future. Moreover, interbank relationships ensured monitoring among members of the private interbank clearing coalition known as the "Suffolk system" and among commercial banks and savings banks (which financed much of commercial banks' activities).

Postbellum Industrial Finance and the Shrinking Role of Commercial Banks

The industrialization of the U.S. after the Civil War posed new challenges for the financial system, and these challenges seem not to have been met as effectively as before by banks. As Alfred Chandler (1977) and others have stressed, the "second industrial revolution" of the postbellum era saw the creation of whole new industries (electricity, steel, and chemicals) and the development of a transcontinental network of railroads. This era also gave rise to the large modern corporation—vertically and horizontally integrated, and controlled by a large bureaucratic managerial hierarchy.

As we have argued, two of the most important roles of a financial intermediary are to reduce the information "gap" between lenders and borrowers, and to provide a credible means for controlling management's use of the funds allocated to it. In a rapidly growing industrial economy, with many new products, new forms of producing, organizing, and distributing products, and an enormous increase in

the scale of production, the challenges faced by the financial system to resolve information and control problems were enormous.

Financial and economic historians generally have argued that the U.S. financial system had only limited success in adapting to these new challenges. U.S. regional financial markets remained largely isolated from one another during the late 19th century, and financial markets were slow to channel funds from low-growth sectors to high-growth sectors. Large, persisting regional differences in interest rates—an indication of a fragmented financial system—were a distinctive if not unique feature of American financial markets.

Although these differences declined over time they remained large relative to those of other countries both before and after World War I. As late as the 1920s, bank loan interest rate differentials across regions on similar types of loans were as large as *three percent*. Such regional differences in interest rates do not show up in the data before the Civil War.¹⁰

Moreover, a study of U.S. manufacturing operations during the postbellum period finds large persistent differences in profitability across both regions and sectors.¹¹ Such evidence reinforces the impression that there were significant impediments to moving capital from low-profit to high-profit uses.

Evidence on the role of commercial banks in the industrialization process is consistent with the view that sources of funding for industrial firms were inadequate. Links between industrial firms and banks were much weaker in the U.S. than in other countries (notably, much weaker than in Germany's universal banking system). This reflected primarily the small size of incorporated banks relative to the large needs of industrial borrowers. There were more than 26,000 banks operating in 1914, and the overwhelming majority of these were not permitted to operate branches, even within their home state. Small banks operating in a restricted location were simply incapable of financing, monitoring, and disciplining large industrial borrowers operating throughout the nation.

To the extent banks were involved with industrial finance, much bank financing occurred without any direct (much less ongoing) relationship between

10. Baskin (1988), Davis (1966), and Calomiris (1993a, 1995) describe the development of American capital markets and their limitations. Davis (1963, 1965), Sylla (1969), James (1978), and Calomiris (1993a) examine data on postwar interest rate differences relevant for commercial and industrial lending. Riefler (1930)

provides data on actual bank lending rates during the 1920s. Bodenhorn (1990) examines regional interest rate differences during the antebellum period.

11. Attack and Bateman (1994).

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the bank and the firms it financed. Intermediaries' claims on firms primarily took the form of corporate bond holdings placed through syndicates. During the period 1901-1912, for example, bonds held by all intermediaries accounted for 18% of funds supplied by external sources to non-financial firms. (And, at the end of this period, commercial banks accounted for two thirds of corporate bond holdings by intermediaries.) By comparison, bank loans accounted for only 12% of externally supplied funds over this period. Moreover, bank loans amounted to only about 10% of corporate debts, while bonds and notes accounted for roughly half of corporate debts, and trade debt constituted 15%.¹²

Reliance on bank loans was relatively high for small firms. Large, established manufacturing firms relied more on bond issues as a means of indirect bank finance and less on loans from banks as a source of financing, especially prior to the 1940s.¹³ Under the U.S. unit banking system, large-scale firms operating throughout the country would have had to borrow from many small unit banks simultaneously. Bond market syndications facilitated this transaction by providing a means for banks to share risk and coordinate capital allocations.

A study of funding sources for a sample of 14 large manufacturing firms from 1900-1910, based on accounting records of sources of net inflows of funds, indicates little reliance on bank lending. For the period 1900 to 1910, these firms reported a total financial inflow of \$1.2 billion, of which \$357 million came from external finance. Of this only \$29 million was in the form of short-term debt. Some bank loans during this period also took the form of long-term debt, but long-term loans from commercial banks were relatively uncommon around the turn of the century.¹⁴

While small firms relied more on banks, it does not follow that banks contributed to the financing of industrial capital expansion by small firms any more than they did to that of large firms. Two detailed studies of the sources of capital in manufacturing provide a glimpse of the contribution of banks to industrial expansion in Illinois and California in the

mid-to-late 19th century.¹⁵ In the case of California, 33 of 71 manufacturing firms studied over the period 1859 to 1880 financed their investment entirely from internal sources. The others incorporated, took in partners, and supplemented these sources with earnings of existing partners from other sources, sale of stock or real estate, "Eastern capital" (in three cases), and loans from a *private* banker. Clearly, commercial banks had no role in the expansion of manufacturing capital in California prior to 1880.

Illinois' experience was similar. In Illinois there is evidence of limited access to funds for relatively mature firms owned by bank stockholders.¹⁶ While banks may have played some role in financing industrial expansion in Illinois, the importance of this role was greatest during the "adolescent" stage of the firm's life cycle—that is, after the firm had become mature enough to invest in becoming a bank insider, but before it had become too large to rely on a bank for its funding needs. Even this role of bank lending in industrial finance is apparent in the histories of only about half of the case studies examined.

Why were commercial banks unable to expand to meet the challenges of financing the new large-scale industrial producers? Naomi Lamoreaux's (1991a, 1991b, 1994) studies of New England banking provide an interesting perspective on that question. She shows that large-scale banking would have been profitable in New England, but that profitable consolidation was not permitted by bank regulators. Many New England banks wanted to merge in response to the growing scale of firms, and the consequent economies of scope and scale in providing industrial finance. When banks were able to merge, their profits increased substantially. Ultimately, however, national and state banking laws stood in the way of bank mergers or branching, as unit bankers blocked attempts to liberalize branching laws and prevented attempted mergers.

Regulatory barriers to the scale of banking changed the functions of New England banks. As already discussed, New England banks had been important sources of finance, monitoring, and con-

12. Goldsmith (1958, 222, 335) gives intermediaries' holdings of bonds. On pages 339-340 he provides data on commercial banks' bond holdings, decomposed according to type of issuer. Goldsmith, Lipsey, and Mendelsohn (1963, 146) provide data on composition of debts for non-financial corporations.

13. Goldsmith (1958, 217-218).

14. Goldsmith (1958, 335, 339) is the source for data on short- and long-term lending by commercial banks. The study of large manufacturing firms is described in Dobrovolsky and Bernstein (1960, 141-142).

15. Marquardt (1960) studies enterprises in Illinois, while Trusk (1960) studies firms in California.

16. Marquardt (1960, 507).

trol for antebellum industrial enterprises, and the manager/owners of those enterprises were bank “insiders.” But those arrangements had changed by the late 19th century. By 1900, New England’s banks had moved toward financing the commercial (rather than industrial) undertakings of bank outsiders. These changes reflected the growing mismatch between large-scale firms and inherently small unit banks. As firms became larger, small banks found it increasingly difficult to satisfy the investment-financing needs of large customers, given the banks’ desire to maintain diversified loan portfolios.

Filling the Gap: The Dawn of “Financial Capitalism”

The fragmented banking system’s inability to finance industrial growth provided the stimulus for innovative new financing methods for corporate borrowers. These included the development of a market for commercial paper (which was held mainly by banks) and the rise of investment banking syndicates. Both of these financing mechanisms were available only to the largest, most established firms. Syndicates were also used to finance corporate consolidations and reorganizations, as well as to market new issues of bonds and preferred stocks.

The commercial paper market, which was a unique innovation of the American financial system, met the short-term borrowing needs of large, high-quality borrowers. The growth of this market spurted in the 1870s, and it reached its pre-World War II peak in 1920 at \$1.3 billion, consisting of the debts of over 4,000 borrowers.¹⁷ Commercial paper houses provided a means for the highest-quality borrowers to locate cheaper sources of funds outside their local markets. Commercial paper brokers received short-term bridge financing from local banks, which was repaid once they had sold their paper (generally to banks in relatively low-credit-demand locations).

The commercial paper market was not open to all firms and was not useful for all purposes. Because commercial paper was used as a money substitute (essentially, a form of interest-bearing bank reserves), only the lowest-risk borrowers were permitted to enter the market, and the maturity of paper was kept short. These restrictions ensured that credit risk was very small in the market, and

made it easier to sell paper in the secondary market. Even for high-quality borrowers, the high costs and high frequency of rollover in the commercial paper market meant that long-term financing needs could not be addressed adequately through commercial paper finance.

The vehicle for long-term finance was the investment banking syndicate. Investment banking syndicates operated as multi-tiered financing mechanisms. At the top were Wall Street investment bankers who planned, priced, and underwrote the issue. Sales occurred through a network of local dealers, many of whom maintained close ties with local commercial banks, which bought securities for themselves and for their customers. As Vincent Carosso (1970) points out in his classic study of investment banking, this selling network developed during the Civil War as a means of placing large issues of government bonds. The network of relationships remained after the Civil War, and provided a basis for continuing distributions of private securities.

The central challenge facing an investment banking syndicate is convincing buyers to purchase the securities of firms about which they know little or nothing. How could a Wall Street financier assure potential American (and foreign) investors that American railroad and industrial securities were sound investments? Why should buyers believe that investment bankers or their dealers will truthfully identify which are the good companies and which are the bad ones?

Clearly, reputation-building, effective signaling, and information-sharing are the keys to resolving the problems of marketing securities to outsiders. The marketing of securities also can be enhanced by the continuing involvement of the investment banker with the issuing firm. As we noted earlier, some of the frictions that discourage outside investors from financing firms come from the inability of outside investors to prevent firms from misusing funds (for example, by taking on excessive risk after placing a large debt issue). For investment bankers to be successful in marketing securities, they must be able to convince outside investors both that the firm’s prospects are good, and that they are in a position to control opportunistic behavior by the firm’s managers after the offering.

17. For reviews of the history of the commercial paper market, see Greef (1938), Foulke (1931), and Selden (1963).

The challenge to financing growth on such a large scale was to find a means to intermediate between creditworthy firms and a large number of uninformed suppliers of funds—to design an effective mechanism to screen, monitor, and control large-scale users of funds raised in centralized capital markets.

An important tradition in American corporate finance emerged as a response to these concerns—the presence of a powerful financier on the board of directors of a corporation seeking funding through an investment banking syndicate. This became a prevalent practice during the last two decades of the 19th century. Indeed, the rise of “financial capitalism”—as this practice came to be known—has its American origins with the railroad financings of the 1870s and 1880s.

Investment Banking and Corporate Finance Prior to World War I

The rise of the modern industrial corporation during the last quarter of the 19th century encouraged this type of affiliation between bankers and companies, which made the rapid industrial growth of that period possible. Spectacular growth of “mass production” with “mass distribution” took place during the 1890s and the first decade of the 20th century. This process required huge outlays of capital—more than any single lender could command or risk. The challenge to financing growth on such a large scale was to find a means to intermediate between creditworthy firms and a large number of uninformed suppliers of funds—to design an effective mechanism to screen, monitor, and control large-scale users of funds raised in centralized capital markets.

The growth of financial capitalism reflected other changes in the economy in addition to the growth of new large-scale industries. Three other influences were particularly important, and they all operated largely through the incentives that they created for developing more efficient means of restructuring existing financial claims. One key factor was changes in law—especially bankruptcy law—that promoted innovations in financial instruments (preferred stock issues) and encouraged the restructuring of corporate balance sheets. A second was episodes of macroeconomic financial distress that encouraged corporate restructurings and consolidations. A third was the incentives for consolidation created by the Sherman Antitrust Act of 1890.¹⁸ These three influences not only created increased demand for securities marketing by investment

banks; they increased the need for involvement of investment bankers in corporate decision-making.

For most of the 19th century, the U.S. lacked a comprehensive law on bankruptcy. The frequent episodes of financial distress that resulted in a large number of railroad failures had not influenced policy makers enough to motivate the formation of a bankruptcy law until 1898. The process of equity receivership underwent constant change in response to ongoing legal innovations in the bankruptcy process. Revisions in the 19th-century legal process included (1) the right of receivers to issue claims with a seniority level higher than the prior senior claimants; (2) the right of courts to secure the claims of unsecured debtholders; and (3) the imposition of “fees” on stakeholders as a method of raising funds to complete the reorganization.

Along with these legal innovations in the bankruptcy process, new methods of financial reorganization were being introduced during this period. These methods included the more frequent use of preferred stock, the collection of assessments to raise cash during reorganizations, and the use of voting trusts. These developments occurred partly as a response to the recurring financial problems from which many corporations were suffering. Preferred stock, for example, was more frequently used during the reorganizations of the 1890s because the bond financing and floating debt used during previous organizations often resulted only in an increased chance of default. After the unsuccessful reorganizations of the 1870s, railroad financiers and investors experimented with new methods of reorganization designed to restore the financial health of their troubled companies.

Extensive use of the voting trust along with the more widespread use of preferred stock as a tool for raising capital in external markets increased the demand for banker representation on the boards of directors of client corporations. The complexity of these financial innovations, and the use of (riskier) preferred stock rather than simple debt magnified the importance of investment bankers as advisers and controllers of corporate decision-making.

Clearly, episodes of financial distress furthered the movement toward investment banker involvement in corporate management by encouraging the

18. For a discussion of the origins of preferred stock, see Tufano (1992). Campbell (1938) and Carosso (1970) discuss the importance of restructurings, and Smith and Sylla (1993) provide a lively analysis of the biggest of these cases—the

formation of U.S. Steel. Bittlingmayer (1985) and Cleveland and Huertas (1986) discuss bankruptcy law changes and the Sherman Act.

legal innovations of the late 19th century and the financial innovations that responded to them. Experiences with distress also taught firms the potential advantages of maintaining an ongoing relationship with an investment banking firm as a form of insurance against the costs of future financial distress. The investment banker's role in this respect depended on his ability to buy and sell large amounts of securities in a short period of time. In times of precarious financial conditions such as the panics of 1861, 1873, and 1893, prestigious investment banking firms were very much in demand for representation and financial advice. During economic downturns, when the rate of railroad and commercial failures increased, reorganizations and necessary mergers were more easily performed by a financial expert who was "inside" the corporation.

The Sherman Antitrust Act of 1890 also added to the demand for investment bank involvement in corporate management. While banning trusts, the Sherman Act did not explicitly prohibit the formation of holding companies. Banker representation facilitated the circumventing of the new regulations by creating legal holding companies to replace the now illegal trusts. In this fashion, the Sherman Antitrust Act actually encouraged the biggest merger movement in U.S. history.¹⁹

More formal empirical analysis of financial capitalism confirms its importance in facilitating the financing of industry. Recent studies have shown that maintaining a close relationship with a major investment banking house was associated with both improved corporate performance and greater access to external finance, allowing firms to fund investment more easily when internal funds were scarce.²⁰

Although financial capitalism was evolving during the last two decades of the 19th century and the first decade of the 20th, it never developed into universal banking in the German sense, or into the *zaibatsu* system that existed in Japan before World War II. Despite its successes, the U.S. system entailed higher costs of external finance for all corporate borrowers than the German universal banking system. And the costs were especially high for immature

firms, which lacked access to the high-flying financial capitalism of Morgan and his counterparts.

A 1995 study by one of the present writers found evidence of the relatively high costs of American corporate finance in a number of comparisons between German and American corporations in the early 1900s.²¹ In particular, the high fees for issuing common stock in the U.S. and the paucity of stock issues (especially of *common* stock) by American firms at this time suggest that information and control problems were better solved by German capital markets. German firms issued far more public equity than debt, most of which was in the form of new common stock issues. In fact, American firms issued very little common stock on the public market prior to World War I. The commissions on common stock flotations charged by German universal banks were roughly 4% and did not significantly vary with the size of the firm or the size of the issue. In the U.S., commissions averaged above 20%, and the costs were prohibitive for all but the largest firms.

The paucity of equity issues and the high commissions charged in U.S. underwritings reflected the difficulty of credibly communicating information about firms and controlling corporate behavior. J.P. Morgan was willing to make a large investment in information about and control over his established industrial clients. But U.S. industry in large measure was left behind by the capital markets. In Germany the situation was different. Even small firms and firms in growing industries could gain access to capital markets, typically through stock issues.

The key difference between the German and American financial system was that German universal banks could take deposits, lend, underwrite securities, place issues, and manage portfolios all within the same financial institution, and *that institution could operate throughout Germany*. Because German banks could branch freely, they were able to use the same network of offices for all these functions. This allowed them to "internalize" the costs and benefits of monitoring and controlling their industrial clients. Before underwriting a security, they had generally lent to and developed a relationship with the issuing firm for some time. After

19. Bittingmayer (1985, 77) estimates that as much as one half of U.S. manufacturing capacity took part in the mergers during the years 1898-1902. The U.S. Steel merger, orchestrated by J.P. Morgan & Co. was by far the largest of these in capitalization.

20. DeLong (1991) finds that the performance of firms affiliated with Morgan was superior to that of non-affiliated firms, and Ramirez (1995) finds that Morgan

firms were more likely to continue investing heavily when earnings were down than non-Morgan firms.

21. Calomiris (1995).

The high fees for issuing common stock in the U.S. compared to those in Germany around the turn of the century, and the paucity of stock issues by American firms at this time, suggest that information and control problems were then better solved by German capital markets.

underwriting the issue, they placed it internally with their own trust customers. After placing an equity issue, the bank retained control over the votes of the shareholders, which concentrated control in the bank.

German banks thus had pre-existing knowledge at the time of the underwriting that helped to reduce information costs. More important, the bank's function as a portfolio manager gave it a way to control the subsequent behavior of the firm, and a continuing incentive to monitor and signal the quality of its industrial clients accurately (since it competed with other banks for the privilege of managing customers' portfolios).²²

Another indicator of the high relative costs of finance in the U.S. is the choice of factors of production. The U.S. tendency to avoid fixed capital in the production process has been widely noted by economic historians, and linked to the high cost of external finance. Firms facing high external finance costs are likely to rely more on liquid assets in the production process (such as materials) because liquid assets are easy to sell during a cash crunch, and they command better terms as collateral for bank loans. Historical analysis of the U.S. production process has revealed a sharp increase during the late 19th and early 20th centuries in American firms' reliance on substitutes for capital in the production process, especially natural resources. The American reliance on natural resources, and related phenomena such as the emergence of high-throughput production and distribution processes, have been attributed in part to the high cost of raising funds to finance fixed capital investment.^{23, 24}

Changes in Financial Capitalism During the Interwar Era: A Brief Experiment with Universal Banking

The initial failure of universal banking in the U.S., as we have argued, can be attributed to constraints on the ability of commercial banks to branch, since this limited any intermediary's ability to lend to (much less underwrite for) large-scale

firms on a national scale. But those initial barriers were not the only limitations that would be imposed on the relationships of financial capitalism. In the wake of populist Congressional "investigations," first in 1912, later in 1932, Congress acted to circumscribe banking powers and limit financial capitalism. The second intervention, in 1933, was the more important. The early legislation had little effect, and other trends began to favor the development of "incipient" universal banking in the 1920s—notably, the wave of deregulation of bank consolidation and branching during the 1920s. The restrictions imposed by the Banking Act of 1933 and the revival of protection for unit banks brought an end to these experiments.

During the first decade of the 20th century, there was a growing public perception that financial capitalism was growing too concentrated and that a "Money Trust" had been formed among the few and powerful investment banking houses during the period. This negative view of financial capitalism, which was magnified by the Panics of 1902 and 1907, became the source of a bitter political debate that culminated in a Congressional investigation of the so-called Money Trust. Progressives such as Arsene Pujo, a Louisiana representative who chaired the Money Trust investigation, and Louis Brandeis, a very influential and ambitious Boston lawyer (who would later become Supreme Court Justice), questioned the influence and power that these few investment banking houses had over a large sector of the economy. The committee cross-examined members of the largest investment banking houses and their client firms during the hearings. Although they never accomplished it, their intention was to show the existence of trusts that controlled a substantial share of capital and abused their strategic position.

U.S. regulation evolved largely in response to public perceptions of who or what was wrong in the existing system. The Pujo Investigation of 1912 and the enactment of the Clayton Act of 1914 were clearly products of this public outcry.

But the momentum of legislation from the Progressive Era waned substantially after 1914 due to the involvement of investment banks in the war

22. Competition is key to the effectiveness of universal banking. The current German system of universal banking displays few of the advantages of its historical predecessor, possibly because of cross-holdings of bank stock that allow German banks to avoid competition.

23. By 1928, resource intensity of exports was 50% higher than its 1879 level (Wright 1990, 658).

24. Studies of variation in asset structures across firms using post-World War II data are also consistent with this argument. These studies find that high fixed

capital intensity is associated with lower-cost access to external finance (as measured either by cross-sectional differences in underwriting costs or by differences in access to bond and commercial paper markets). For example, Calomiris, Himmelberg, and Wachtel (1995) find that commercial paper issuers (the firms with the lowest costs of external finance in the U.S. currently) maintain average ratios of inventories-to-fixed capital of 0.58, while firms without access to public debt markets maintain inventory-to-fixed capital ratios of 1.26 on average, and this difference is not explained by industry effects.

effort. The perception changed in favor of Wall Street once again, as it came to be viewed as a major contributor to the financing of the Allies' war expenditures. During this period, the role of the investment and commercial bankers shifted from financing domestic corporations to financing domestic and foreign governments. In the wake of these changes, there was little effort to enforce and strengthen the Clayton Act's weak limitations on bank involvement in boards of directors.

Two mutually reinforcing developments during the 1920s changed the menu of feasible relationships between financiers and corporations, and led to "incipient" universal banking. First, partly as a consequence of how the war was financed, the American public had increased its appetite for financial securities. Even small, unsophisticated investors wanted to partake in the securities boom of the 1920s. Second, largely in response to a wave of bank failures caused by the decline in agricultural incomes after World War I, many states liberalized their regulations on bank branching and consolidation. From 1920 to 1929, nearly 4,000 banks were absorbed by merger. At the same time, the number of bank offices operated by branching banks rose from 1,811 to 4,117.

This meant a substantial increase in the scale and geographic range of many U.S. banks. It also meant that many commercial banks were becoming large enough to reap the advantages of scope from becoming universal banks. Commercial banks were not permitted to sell or own stock directly but could do so through wholly-owned affiliates that effectively operated as organs of the bank. The first three investment affiliates of national banks were organized between 1908 and 1917, and they served as models for the growth of affiliates in the 1920s. By 1929, 591 banks operated investment affiliates.²⁵

In 1929, securities market optimism was suddenly shattered. The stock market crash and the subsequent Great Depression left a bitter taste with the public and, once again, the negative sentiment against the financial community had been awakened. Soon another Congressional investigation was initiated, this time under the chairmanship of Ferdinand Pecora. This investigation intended to

show the rampant abuses, fraud, and conflict of interest that resulted in the systematic fooling of securities investors.

These critics argued for the end of bank affiliates because they believed that pre-existing (senior) debt obligations of issuing firms, if held by the bank managing a new issue, created a conflict of interest. It was argued that banks had an incentive to mislead investors when selling junior securities of the firm because doing so would increase the value of existing bank-held debts of issuing firms. Others opposed to affiliates based their opposition on the supposed connection between the stock market collapse and subsequent bank failures.

These hearings, unlike their Progressive Era predecessor, did culminate in far-reaching regulations in the financial community. Most important were the Securities Acts of 1933 and 1934, which require complete disclosure of financial information, and the (Glass-Steagall) Banking Act of 1933, which separated commercial banking activities from investment banking, created federal deposit insurance, and imposed Regulation Q ceilings on bank deposits.²⁶

From the standpoint of incipient universal banking, these changes meant the end of a brief experiment. That was clearly the intent of Congress. The Banking Act of 1933 was a compromise among various positions, and there were great differences between Glass's and Steagall's regulatory goals. The compromise they reached was intended to reverse the demise of small banks and to remove commercial banks from their connections to securities markets. Deposit insurance, which was Representative Steagall's hobbyhorse, was understood to be a mandated subsidy from large banks to small banks, and was viewed as an alternative to expanding branching and consolidation as a means to stabilize the banking system. The separation of commercial and investment banking followed from Glass's view that the stock market had been the ruin of the banking system. Glass pushed for Regulation Q as a further means to insulate banks from securities markets. He argued that removing interest on deposits would discourage banks from reserve pyramiding in New York, and thereby break the link between the

25. Peach (1941, 18-20, 61-64).

26. See Carosso (1970), Smith and Sylla (1993), Calomiris and Raff (1995), and Calomiris and White (1994) for descriptions of the New Deal financial market and banking reforms and their effects.

Two mutually reinforcing developments during the 1920s changed the menu of feasible relationships between financiers and corporations, and led to “incipient” universal banking. One was the dramatic increase in the American public’s appetite for financial securities. The second was the liberalization of many states’ restrictions on bank branching and consolidation.

banking system and the call loan market for brokers and dealers on Wall Street.

It is ironic how this “new” negative perception in Washington contrasts with the one prevalent during the Progressive Era. During the Pujos Investigations, Brandeis focused on the oligopolistic behavior of the financial community as the main source of evil that plagued the industry. Indeed, the concept of a “Money Trust” derived from the public perception that the financial industry was too concentrated, and thus easily controllable by a few influential financiers. The Pecora investigation of the 1930s, by contrast, effectively blamed the *competitiveness* of the securities industry for the “evils” that beset the market during the late 1920s. As one example, market critics alleged that bank affiliates were unloading securities of poor quality onto the innocent public largely through “misleading” advertisements. But these advertisements were, of course, a symptom not of financial monopoly, but of the increased competition and entry that had taken place in the 1920s.

The principal accusations of the Pecora hearings have been discredited by recent research. Benston (1989) criticizes the methods of the hearings and finds no evidence to support their “findings.” White (1986) finds that banks that operated affiliates were less likely to fail than other banks, and traces this fact to the income diversification that non-bank activities offered. Kroszner and Rajan (1994) argue that the alleged conflicts of interest that supposedly led bank-affiliated investment bankers to cheat their clients did not exist. They show that the securities promoted by commercial bank affiliates were of comparable quality to those underwritten and sponsored by investment banking houses. Bank affiliates likely avoided conflicts of interest, in part by purchasing sufficient quantities of junior issues themselves and holding for sufficient lengths of time to quell any suspicions that the issues were being deliberately overpriced. For example, Harris Bank and Trust in Chicago prided itself on its willingness to purchase shares that it underwrote, and incorporated that fact into its motto (“we sell and hold”). Furthermore, reputational considerations discourage underwriters from overpricing securities. Such behavior would be punished by less demand for purchases in the future, and by the loss of trust accounts of securities purchasers who suffered losses on the transaction.

It now seems clear that one of the principal effects of the New Deal reforms was to undermine

beneficial relationships between firms and their bankers. As shown in a 1994 study by Ramirez and DeLong, before the New Deal legislation companies affiliated with banks had higher market values than otherwise comparable firms without such affiliations. After the New Deal, however, bank-firm relationships had no significant effect on firms’ market values. From this standpoint, the enactment of the New Deal reforms appears to have imposed significant financing costs on corporations.

Why would bank-affiliated firms have higher market values before the New Deal reforms, but not after? The New Deal reforms limited the relationship between financial intermediaries and corporations. By separating investment banking from commercial banking, the Glass-Steagall Act reduced the influence that both commercial and investment banks had over client corporations. For commercial banks this was clearly the case since now they were not allowed to own corporate securities as assets. It also reduced the influence of investment banks since the contacts and financial resources that these banks had with the commercial banks had been eliminated. Investment bankers had to rely solely on their ability to search for clients to sell the underwritten securities, and not on the financial backing of commercial banks that stood ready to purchase blocks of securities. For the client corporations, it indirectly increased the cost of raising funds in external markets. To the extent that financiers were representing shareholders, the separation of ownership and control of public corporations described by Berle and Means in their 1932 classic had become more acute. Judging from the patterns of corporate finance in the next 20 to 30 years that we discuss below, this separation appears to have had the effect of dramatically increasing shareholders’ required rates of return and, hence, the corporate cost of public equity.

There is a good deal of indirect evidence supporting the claim that the cost of raising funds in public financial markets increased in the aftermath of the New Deal financial reforms. Private placements (private debt issues held by life insurance companies) increased dramatically after the 1930s. Other factors may have contributed to the long-term growth of private placements during the late 1940s and 1950s, but the timing of the early growth spurt in the late 1930s and early 1940s supports the notion that private placements were favored by the rising cost of issuing public securities.

The financial devastation of the Great Depression (and the restrictive financial regulations that followed) increased the cost of corporate finance and reduced the relative importance of finance from sources other than retained earnings. Flow of funds data indicate that the corporate sector as a whole obtained more than 100% of its financing from retained earnings. There was a net repayment of debt claims and virtually no stock issues during this period. Over the period 1940-1945, retained earnings still accounted for 80% of corporate finance sources.²⁷

To the extent that sources other than earnings were forthcoming in the late 1930s and 1940s, they increasingly took the form of private placements. From 1934 to 1937, private placements accounted for 12% of a small total of corporate offerings. By 1951, private placements accounted for 44% of all corporate offerings, 58% of all debt issues, and 82% of all debt issues of manufacturing firms. From the beginning, life insurance companies have accounted for the overwhelming majority of these purchases, with the remainder held largely by banks. For the period 1990-1992, for example, life insurance companies and banks (broadly defined) had respective shares of 83% and 11% of the private placement market.²⁸

Bank loans also increased in importance in the 1940s and 1950s. Indeed, the growth in private placements during the 1940s was matched by growth in commercial bank lending to corporations. From 1939 to 1952, life insurance companies' outstanding holdings of corporate debt rose from \$10.4 billion to \$34.7 billion. From 1939 to 1952, total outstanding loans from operating commercial banks to non-financial corporations increased from \$6.2 billion to \$21.9 billion. Over that same period, bank holdings of bonds barely increased at all—from \$3.0 billion to \$3.4 billion.²⁹

Regressive Changes in Financing Relationships after the 1930s

Apart from the Ramirez and DeLong study cited earlier, why do we believe that private placements and bank debt were inadequate substitutes for the

financial relationships of the 1920s? There are two (closely related) reasons: (1) inside debt was in the form of the most senior obligations of corporations; and (2) inside debt remained small relative to assets. These phenomena are related in the sense that the seniority of debt is enhanced when senior debt remains small relative to total assets. The information and control requirements of relationships that entail the supply of small quantities of senior debt are very limited. Banks and insurance companies are able to protect themselves by restricting debt ratios, holding secured (collateralized) debt, and designing and enforcing financial and behavioral covenants defined in ways that are relatively easy to observe.

Limits on financial relationships not only raised the cost of finance for new firms, they weakened stockholder discipline of managers in existing public companies. As Michael Jensen (1986) has argued, managers of mature companies with more cash than they can profitably reinvest have incentives to use that "free cash flow" in ways that reduce stockholder value—for example, in low-return investments designed to preserve market share or, perhaps worse, diversifying acquisitions. In such cases, the use of large quantities of debt can have the beneficial effect of forcing managers to maximize operating profits to avoid financial distress. For this reason, financing arrangements in which banks and insurance companies hold small amounts of corporate debt (relative to assets) are likely to be a poor substitute for universal banks that are both junior and senior stakeholders in the firm, and that control a significant share of the voting power of the stockholders.

The 1940s and 1950s, besides being a period of relatively high cash flow, were a time of unusually low debt ratios in the U.S. compared with both earlier and later periods. For example, data on the ratio of the market value of corporate debt to the market value of corporate assets indicate debt-to-asset ratios during the 1940s and 1950s of roughly 15%. Estimates for the same measure average over 30% for four selected years between 1900 and 1929. Leverage ratios rose significantly beginning in the 1960s and

27. For periods of similar length prior to and after the Depression, internal funds typically provided between one-half and two-thirds of funding. Data on the shares of external and internal funding are from Taggart (1985, 26). Part of this reliance on retained earnings during the early 1940s may reflect the crowding out of corporate fundraising by government bond issues. Much of the growth in insurance company holdings of private debt in the late 1940s and 1950s, for example, coincided with a decline in holdings of government debt.

28. Data on private placements are from Securities and Exchange Commission (1952, 3-6) and Carey, Prowse, Rea, and Udell (1993).

29. Data on bank holdings of bonds and notes are from Goldsmith (1958, 339,364). Producer price data are from Council of Economic Advisers (1974, 252).

It now seems clear that one of the principal effects of the New Deal reforms was to undermine beneficial relationships between firms and their bankers.

reached the 25–40% range for most of the 1970s and 1980s.³⁰ Several studies have argued that the unusually low debt ratios of the 1940s and 1950s exerted too little discipline over managers.³¹

To summarize, in the immediate postwar period, the continuing growth of the size of corporations and the lack of any external concentration of power to control corporate decision-making weakened the efficiency of capital market allocations and thereby increased the costs of corporate finance. The concentration of power over the resources of the corporation had shifted in significant measure from the hands of owners (and their financier agents) to those of management.

Institutional Investors and the New Financial Capitalism³²

The relative importance of retained earnings and senior inside debt finance during the 1940s and 1950s was a short-lived phenomenon. Private placements as a percentage of securities offerings peaked in the mid-1960s. The resurgence in public offerings of bonds and stocks that began in the 1950s reduced the share of private placements to only 14% of total securities issues by 1970. That trend accelerated in the early 1970s, and has continued into the present, with dramatic growth over the 1980s and 1990s in public issues of debt and equity, and a relative decline in the share of inside debt relative to total financing sources. What caused this resurgence of public debt and equity issuance?

The boom in equity issues, beginning in the 1960s, was so dramatic that in 1971 the Securities and Exchange Commission published an enormous multi-volume study and Congress held hearings examining these changes. That study concluded that, in the market for new common stock issues, institutional investors such as pensions, mutuals, and trusts had changed the way equity issues were sold. By acting as purchasers of large amounts of stock, particularly in unseasoned companies, these investors reduced the marketing costs normally associated with placing such stock. The SEC found that institutional investors accounted for 24% of all purchases of 1,684 initial public offerings (IPOs) of common stock from January 1967 to March 1970. Despite enormous

short-term profits that some investors realized from rapid sales of initially underpriced IPOs, most institutional investors bought stocks in the primary market to hold as long-term investments. (Seventy percent of institutional IPO purchases remained unsold after 12 weeks.) Institutional investors did not discriminate in their purchasing according to the size of the issuer, but did tend to deal only with the largest underwriters.

Involvement by institutional investors has been an important contributor to the decline in the cost of public issues of equity after the 1950s. As Friend, Blume, and Crockett noted in a study published in 1970:

These institutions, which first sparked the cult of common stocks, later attracted public attention to “growth” stocks and created the fashion for instant performance. Innovative and inventive, institutional money managers have ventured into areas where older and more prudent investment men feared to tread, taking positions in the stocks of unseasoned companies, setting up hedge funds, devising new types of securities (emphasis added). (vii)

Part of the SEC’s 1971 study focuses on the impact of institutional investors on corporate issuers. It emphasizes that, by selling in block to institutional buyers of primary public common stock offerings, investment bankers could economize on the costs of marketing securities. It was easier for underwriters to communicate an issuer’s “story” to a few block buyers, especially if those block buyers were institutional investors with large trust accounts managed by New York banks. Additionally, the concentration of stockholdings of unseasoned firms may have facilitated control over management, and thus reduced the potential risk of stock purchases and the need for information about the firm at the time of the offering.

The SEC argued that the benefits of institutional purchasing for reducing issue costs on public equity went beyond the direct transaction-cost savings of placing shares in the hands of institutional investors. The participation of institutional buyers in an offering also made it easier to sell the remainder of the offering to individual investors. In the words of the SEC study:

30. Data on debt ratios are from Taggart (1985, 24–28).

31. Myers (1976) points to unprofitable mergers as an example of lack of discipline over corporate management during the 1960s.

32. The discussion in this section borrows heavily from Calomiris and Raff (1995).

Retail members of the syndicate have been known to advise their customers in advance of the offering that institutions have indicated their intent to buy the issue... While this knowledge of institutional interest may increase the public's appetite for any stock, the effect is greater for small, less established issuers than for large established issuers and still more so for first offerings of such small companies.... The possible public impression that institutions, with their purported research capabilities and sophistication, would not allow themselves to be bilked helps explain individual investors' attitudes toward institutional interest. The result, then, of supposed or revealed institutional interest in an offering is to enhance retail interest as well. (p. 2393)

More formal empirical studies have reported a dramatic reduction in issuing costs from 1950 to 1970, and have identified small, unseasoned issuers (those for which information problems and marketing costs are greatest) as the largest beneficiaries of such reductions. These studies attribute the decline in the costs of public issues to the role of institutional investors in making block purchases of stock, which in turn reduces costs of information and control in the market for public securities.³³

The growth of pension funds' and mutual funds' holdings of equity in the late 1950s and 1960s was dramatic. In 1946, investment companies (mutual funds) and private pension funds held 2% and 0.8% respective shares of corporate equities. By 1980, private pensions held 10.4% of corporate equity, and investment companies held 4.6%. Private pension funds' holdings of common stock grew from 12% of their total assets in 1951 to 68% in 1971.³⁴

The continuing growth of these intermediaries reflects their unique abilities and incentives to invest in information and control corporate performance. The principal sources of early growth in pension funds were the wage controls of World War II (which favored the use of non-wage compensation) and the tax exemptions enjoyed by pensions, which became increasingly valuable during the 1960s.

As the 1971 SEC study also showed, institutional investors were very active in the venture capital

market as well. In addition to their \$1.4 billion in public IPO purchases during the period 1967-1970, institutional investors purchased \$3.5 billion of non-publicly traded "restricted" securities (venture capital investments in equity or debt with equity features). Venture capitalists provide a combination of discipline and funding for a class of firms very different from those affiliated with Morgan in the pre-World War I era. Whereas Morgan tended to deal with the largest and best-seasoned credit risks in the economy, venture capitalists finance unseasoned firms that lack access to public markets and play an important role in managing the financial arrangements of those firms.

Venture capital funds, which became especially popular in the 1970s, operate as two-tiered sets of relationships. Large institutional investors hold shares of the fund, which invests in multiple firms selected and monitored by the venture capitalist. To ensure the alignment of its interests with those of its limited partners, the venture capitalist also retains a stake in the fund. Such relationships among the institutional investors, venture capitalists, and start-up firms often have spillover effects as the firms mature. Institutional investors often participate in the IPOs of the firms that they helped finance earlier.

Not only have the new institutional investors relaxed constraints on the financing of new enterprises, they have acted to strengthen stockholder discipline over managers by concentrating stock ownership and by financing efficient restructurings. For example, bank venture capital funds have been particularly active in LBOs, MBOs, and industry consolidations.

Government policy has had important influences on the venture capital market, and on the involvement of institutional investors and commercial banks in venture capital funds. Regulatory changes that favored limited commercial bank entry into equity funds to finance small businesses (under the Small Business Investment Company Act of 1958) provided an early impetus for expansion. In 1971 the Bank Holding Company Act further relaxed restrictions on bank entry into venture capital, and there was a significant influx of bank capital into venture

33. The above paragraph refers to studies by Mendelson (1967) and Calomiris and Raff (1995), which conclude that the costs of public common stock issues (measured by underwriting commissions, or commissions plus expenses) fell dramatically from 1950 to 1970, and that this decline was especially pronounced for small, relatively unseasoned firms. The benefits of institutional purchases are also visible in cross-sectional differences in underwriting costs. In a study of the

determinants of underwriting fees for recent common stock issues, Hansen and Torregrossa (1992) show that institutional investor purchases of common stock issues are associated with lower issuing costs.

34. Useful studies of the development of institutional investors include Andrews (1964), Greenough and King (1976), Ture (1976), and Munnell (1982).

While new foreign entrants enjoyed a cost-of-funds advantage, domestic U.S. banks enjoyed an information cost advantage in loan origination and monitoring that helped them retain customers for which those costs were an important component of the cost of providing loans.

capital affiliates. Bank holding companies, moreover, have come to play an increasingly important role in the growth of private equity finance. In some of the largest American bank holding companies (including Citicorp, Chemical, Chase, First Chicago, and Continental), venture capital earnings contributed substantially to net profits during the 1980s. Finally, a redefinition of ERISA's "prudent man rule" in the late 1970s has helped overcome pension funds' earlier reluctance to invest in venture capital, and pension funds today routinely hold up to five percent of their funds in such investments.

Why Technology Has Not Done Away With Relationship Financing

The growth of new institutional investors after the 1960s brought with it a new scope to financial relationships—one reminiscent of pre-Depression financial capitalism. A multi-tiered intermediation arrangement involving institutional investors, trust bankers, venture capitalists, large commercial banks, and investment bank underwriters has emerged. This has been accompanied by the formation of long-term relationships among all of these different groups, and with the corporations in need of funds. While these arrangements are still a far cry from universal banking, they share some important advantages. The scale of funding sources is large relative to the needs of firms (which economizes on the costs of placement); there is often continuity in the relationships between firms and intermediaries over time; and intermediaries are junior as well as senior claimants of the firm (which provides incentives and means for intermediaries to monitor and control corporations).

It has become common to argue that the rapid growth in securities transactions during the 1980s, domestically and internationally, is evidence that financial relationships are no longer important. Such arguments usually point vaguely toward computers as the source of the new technological breakthroughs. Such advances have led to developments like the expansion of common stock markets in developing countries, the surge of bank loan sales, syndications, and asset-backed securitizations in the U.S., and the remarkable growth of derivative transactions worldwide.

Has innovation made it possible to resolve information and control problems without resort to traditional relationships? We think not.

One indicator of the demise of relationships—the significant decline in domestic commercial bank holdings as a percentage of total corporate debt (from 30% in 1983 to 16% in 1993)—has been misinterpreted. This drop in the percentage of domestic bank loans has been roughly equal to the increased market share of two categories: foreign bank loans and market (notably, asset-backed) securities. What tends to be overlooked in arguments about the demise of U.S. bank lending is that, for many borrowers, such changes in the identities of the ultimate holders of debt did not amount to changes in their banking relationships.

Take the case of the rise of foreign bank loans. In many cases, domestic banks either originated and then sold loans to foreign banks, or they managed syndicated loans in which foreign banks participated. A study by Calomiris and Carey (1994) concludes that foreign banks' success in gaining U.S. corporate market share during the 1980s reflected their cost-of-funds advantage over U.S. banks—an advantage that arose from foreign banks' higher capital ratios during that period. But, as the same study also showed (see Table 1), foreign banks significantly underpriced domestic banks *only in the case of high-quality borrowers*. In the case of low-quality borrowers, foreign banks' interest rates were about the same as that of domestic banks, and their percentage market share in relation to U.S. banks was considerably lower. Foreign banks' lack of pre-existing lending relationships presumably made it more difficult for them to compete for this business where information costs are likely to be significant. In other words, while new foreign entrants enjoyed a cost-of-funds advantage, domestic U.S. banks enjoyed an information cost advantage in loan origination and monitoring that helped them retain customers for which those costs were important.

The relationship-cost advantage of U.S. banks is also visible in performance differences between U.S.-owned and foreign-owned banks after the foreign-entry wave of the '80s. Nolle (1994) finds that foreign-owned banks had much lower returns on assets in the '90s, and that this difference reflects both higher overhead costs and higher loan-loss rates for foreign banks.

Also worth noting is that another major category of new growth—asset-backed securitizations—requires origination, and often "credit enhancement," services that are typically provided by relationship bankers. Thus, while bankers may have changed the

TABLE 1
MEAN SPREADS
ON REVOLVERS
BY LENDER TYPE AND
BORROWING RATING
1986-1993

Borrower Rating	U.S. Owned Banks	Foreign Owned Banks	Mixed U.S. and Foreign Owned Banks
A: Mean Spread (Number)	82 (64)	40 (35)	47 (125)
BBB: Mean Spread (Number)	89 (90)	67 (30)	80 (226)
BB: Mean Spread (Number)	158 (217)	165 (33)	146 (188)
B: Mean Spread (Number)	229 (229)	210 (45)	220 (161)

packaging of their credit services, they continue to play their familiar roles as screeners, monitors, and marketers for their client firms.

In short, computers have not repealed the laws of economics. They have not provided a magical solution to creditors' age-old problems of monitoring and controlling the behavior of owners, or of stockholders' problems of controlling managers. Computers have facilitated the dissemination of statistical credit analysis, and thus encouraged financial innovations that allow the sharing of risk among institutions, nationally and internationally. But they have not fundamentally changed the fact that, for the vast majority of firms, corporate finance is still based on relationships.

Indeed, one could argue that new financial innovations are more rapidly propelling financial intermediaries toward universal banking. Once the fixed costs of providing multiple products are reduced, there is more room for "relationship economies of scope" to influence the structure of the financial services industry. By expanding the menu of services that a single intermediary can provide, technological progress may end up strengthening long-term relationships between clients and their intermediaries.

THE PROSPECTS FOR UNIVERSAL BANKING

The most recent major change in corporate finance technology has come from relaxation of restrictions on bank scale and scope. Limits on branching—the single most important impediment to an efficient system of corporate finance throughout American history—have been virtually eliminated. Banks have gained entry to non-traditional

banking activities, including securities underwriting, derivatives sales, mutual fund management, and venture capital finance. There are still important legislative and regulatory barriers to universal banking in the U.S.; but the tide clearly has turned, and many academics and regulators have come out in support of removing existing barriers. Although Congressional efforts to repeal Glass-Steagall outright stalled in 1996, the Fed once again relaxed limitations on bank involvement in securities underwriting and other activities.

Why the sudden change? In the 1980s and 1990s, as in the 1920s, regulators and politicians relaxed restrictions and expanded bank powers in response to a crisis. In the 1920s, it was the collapse of small, rural banks that prompted a bank consolidation movement, which in turn encouraged the expansion of powers. Most states relaxed branching laws between 1920 and 1939 to encourage entry by banks amid widespread economic distress. In the 1980s, it was once again the collapse of many small banks and thrifts that prompted action. Between 1979 and 1990, most states significantly relaxed their internal branching laws prior to any federal action.

Federal regulators, notably Alan Greenspan, were also concerned about declining profits of large banks in the late 1980s and the increased competition banks faced from abroad, which was the single most important source of lost commercial and industrial lending business for domestic banks. Regulators argued that expanded powers were necessary to level the playing field between universal banks in other countries and American commercial banks.

An emphasis on the relationship benefits of universal banking raises interesting issues for current

One could argue that new financial innovations are more rapidly propelling financial intermediaries toward universal banking. By expanding the menu of services that a single intermediary can provide, technological progress may end up strengthening long-term relationships between clients and their intermediaries.

regulatory reform. For example, repeal of restrictions on equity holdings by banks would have likely have greater economic benefits (by reducing the costs of corporate governance and financial distress that are built into the cost of corporate finance) than allowing banks to sell insurance. But, it is insurance proposals that are receiving far more attention in current discussions of universal banking. Furthermore, repealing underwriting restrictions has the potential to yield greater relationship-cost savings if U.S. banks (like German banks) were also allowed to sell the issues they underwrite to their own customers and thus retain control over stock voting rights of client firms.

CONCLUSION

The history of the American system of corporate finance, and of corporate financial relationships within that system, reflects the interplay among financial frictions (such as information and control costs of corporate finance), government policies (in the form of bank and financial market regulations, tax policies, pension laws, bankruptcy laws), financial crises, and financial innovations. These influences have together determined the menu of financial relationships available to corporations over time.

In terms of its ability to reduce the information and control costs of corporate finance, the history of the American financial system includes periods of significant progress, as well as major reversals.

Three relatively successful periods—the antebellum New England system, incipient universal banking in the 1920s, and modern-day financial capitalism—are separated by periods that saw dramatic reductions in the menu of financial relationships. Thus, although there may be a tendency for efficient financial relationships (like those that grow up in a universal banking system) to prevail *over the very long run*, there are significant interim periods (some lasting decades) in which government interventions have stood in the way of these beneficial relationships. The history of U.S. corporate finance has by no means been a process of steady or rapid convergence toward the most efficient set of relationships.

Whether recent trends toward the expansion of the scale and scope of commercial bank operations will usher in a lasting era of universal banking and low-cost corporate finance in the U.S. remains an open question. We suspect that the road ahead will be as bumpy as that which has already been travelled. The future menu of relationships is hard to predict; institutional change is path-dependent and subject to the unforeseeable influences of financial crises and government policy. Despite the potential for improvement in banking regulation brought by global competition, the next financial crisis—say, a costly bank failure stemming from complicated derivative transactions—could reverse some of the progress that has been made in broadening banks' involvement in non-traditional corporate finance.

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