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Who (or What)
Is to Blame?

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The Crisis in
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AN ACCIDENT WAITING TO HAPPEN

ABSTRACT: Banks provide a valuable but inherently unstable combination of deposit-taking and lending functions that were successfully held together for several decades after the New Deal by tough banking rules. The weakening of the rules after the 1970s promoted the displacement of traditional relationship-based banking with securitized, arms-length alternatives that encouraged banks to undertake activities about which bankers lacked deep relationship-based knowledge of the risks. Ironically, this risky behavior, encouraged by loosened regulation, was reinforced by progressively tightened securities regulation, which promoted stock-market liquidity but also deprived large banks (and other publicly traded companies) of oversight by investors with “insiders” knowledge. Both the underregulation of banking and the overregulation of securities were underpinned by economic theories that favored blind diversification in liquid, anonymous markets, and that ignored the value of relationship-based knowledge and case-by-case due diligence.

The specific missteps that triggered the current financial debacle have been extensively criticized. The easy-money policy of the Greenspan Federal Reserve after 2000, misaligned exchange rates that sustained large global financial imbalances, a housing bubble inflated by Fannie, Freddie, and subprime lenders, forays by insurance companies such as A.I.G. into activities outside the purview of insurance regulators, AAA ratings bestowed by rating agencies on securitized debt obligations, and the comprehensive recklessness of the large banking houses have received their due reproach.

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This paper looks at some longstanding underpinnings of the crisis: factors that helped turn the recent lapses of bankers, rating agencies, and mortgage brokers into a crisis of extraordinary proportions and scope. Finance, I will argue, has been on the wrong trajectory for more than half a century. Its defects derive from academic theories and regulatory structures whose origins date from the 1930s, which encouraged financiers to rely on blind diversification as a substitute for due diligence and ongoing relationships.

As with any “structural” explanation, my analysis cannot tell us why problems unfolded in a particular manner. Yet without such an analysis, we cannot understand basic defects in the foundation of our financial system.

The Effect of Make-Believe Models on the Real World

Until the 1930s economists had two views of uncertainty. Frank Knight, who dominated the University of Chicago’s economics department through the late 1940s, and John Maynard Keynes highlighted uncertainties that could not be reduced to quantifiable probabilities. On the other side, followers of the Reverend Thomas Bayes developed theories in which all uncertainties were quantified, like the odds of hitting a number on a roulette wheel. The two views didn’t necessarily conflict: Economists used whichever best suited their problem and approach. But the Bayesian view became dominant¹—not because it was established that people can, do, or should always think probabilistically, but because this notion allowed economists to build seemingly scientific mathematical models that more or less drove the old “literary” or “narrative” style of analysis to the fringes of economics.

Further mathematical convenience was purchased by assuming that because everyone is omniscient, all individuals form identical probability estimates. Even though this assumption had no “microfoundations” (Elster forthcoming)—we have no reason to think that everyone would form the same estimates—and even though it led to what the philosopher Jon Elster (2007) calls “science fiction” economics, it came to underpin basic theories of modern finance. The Capital Asset Pricing Model (CAPM), for instance, assumes that all investors place exactly the same value on all stocks. This is self-evidently false: Without buyers who believed that IBM’s shares were cheap and sellers who thought them

dear, there would be virtually no trading of IBM's stocks.² Yet CAPM has "become the backbone of modern price theory of financial markets" (Lindbeck 1990).

Worse, when the assumption of identical probability estimates conquered the theoretical journals, it provided a springboard from which make-believe modeling could extend its sway over financial practice, too.

In the real world of old, faced with unquantifiable uncertainty, sensible investors, bankers, and borrowers made subjective judgments in the holistic manner of a common-law judge, considering all the relevant precedents and features of the case at hand, and anticipating the possibility of mistake and ignorance. Or as John Kay (2009) puts it, they tried to construct a coherent narrative to guide their decisions. Too, their concerns about unforeseeable developments encouraged the development of ongoing relationships that facilitated the judgments necessary for mid-course changes. If all uncertainty can be reduced to probability distributions, however—and if (assumed) omniscience ensures that market prices always accurately reflect the risks—then case-by-case judgments and ongoing relationships are unnecessary. Returns are maximized for the least risk and negligible cost simply through diversification.

In 1974 Paul Samuelson, who had spearheaded the theoretical triumph of mathematical economics, issued investors a "Challenge to Judgment" in the first issue of the *Journal of Portfolio Management*. The world of "practical operators," Samuelson wrote, was giving way to a "new world of the academics with their mathematical stochastic [probabilistic] processes." The academics understood that valuing individual securities was a wasted effort. Ordinary investors should understand this too, Samuelson counseled. Eschew stock picking—just buy a diversified market portfolio and throw away the key.³

Of course, it's imprudent for investors to put all their eggs in one basket; and conversely, as formalized in the CAPM, the sum of many independent gambles may not involve great risk. Similarly the Samuelsonesque hypothesis that market prices are "efficient" provides a useful starting point for investors: Hasty judgments that market prices are too high or low are unwise. But, except in an imaginary universe of known probability distributions, relying on diversification to substitute for due diligence and ongoing oversight is delusional. Backing twenty thieves or buying a basket of 500 inflated bubble stocks does not produce higher returns than going with a single Madoff or WorldCom.

Moreover, blind diversification involves free riding, so it can't work if it becomes widespread. Dispensing with the costs of active investment management seems astute—even high minded. But, like littering or not voting, it's unsustainable *en masse*: If everyone eschews judgment, who will make market prices even approximately right, or exclude from the diversified portfolio the offerings of thieves and promoters of worthless securities? Sensible investors, who are predisposed to believe that well-functioning markets price assets accurately, must at least make an ongoing effort to assess whether the other players are doing what it takes to keep the markets well functioning.

Nonetheless, the Samuelson prescription proved enormously influential. Reading "Challenge" inspired John Bogle to launch the first stock index fund in 1976, and by November of 2000, it had become the largest mutual fund ever, with \$100 billion in assets. Case-by-case investing didn't completely disappear, of course. Venture capitalists who invest in young, unlisted companies continue to use the "common-law," due-diligence approach and maintain close ongoing relationships with the companies in their portfolios. But this active style was progressively banished to the margins. The standard formula for institutional investors comprised a core holding of the Standard and Poor's "500" stock index, with peripheral investments in venture-capital funds and other such "alternative" vehicles.

Free riding through blind diversification took off in the credit markets as well. Bruce Bent launched the first American money-market fund in 1970. Now nearly 2,000 funds manage about \$3.8 trillion. Like stock-index funds, money-market funds eliminated the costs of case-by-case judgment and of maintaining ongoing relationships: They simply bought a diversified portfolio of short-term instruments, certified as high quality by a rating agency—a certification that cost the money-market fund nothing. The traditional relationship model of bank lending, encumbered by the overhead of loan officers and committees, faced significant cost disadvantages.

The emergence of ingenious schemes to take advantage of money-market funds that depend entirely on free double- or triple-A certification by Standard and Poor's and Moody's (which, themselves, have come to rely on stochastic modeling processes rather than on costly shoe-leather due diligence) was also unsurprising. Losses on debt issued by Lehman Brothers broke Bent's pioneering Reserve money-market fund last September, and the S.E.C. is preparing to file suit against Bent. The

debt was, of course, rated AA or AAA; that is the law governing money-market funds. But not all highly rated securities homogeneously deserve their high ratings.

How Regulation Encouraged Mass Equities Trading

The regulatory apparatus whose origins date back to the 1930s was designed to protect bank depositors and investors in publicly traded securities. It has also unwittingly undermined due diligence and ongoing relationships, but as we will see, in quite different ways: Protection of securities markets has become too strong, whereas the regulation of banking became too weak.

Federal securities regulation involves a subtle tradeoff. It sustains the unparalleled liquidity and breadth of U.S. stock markets, but it also fosters antagonistic, arms-length relationships between shareholders and managers (Bhidé 1993 and 1994a). The foundations of this regulatory system can be traced to the extensive losses suffered by the public during the Crash of 1929. Between September 1, 1929, and July 1, 1932, stocks listed on the New York Stock Exchange lost 83 percent of their total value, and half of the \$50 billion in new securities that had been offered in the 1920s proved to be worthless. The losses were widespread: According to the S.E.C., the Crash followed a decade in which some 20 million shareholders “took advantage of the postwar prosperity and set out to make their ‘killing’ on the stock market,” giving “little thought to the inherent dangers in unbridled market operation.” Responding to “the outraged feelings of voters,” Congress passed the Securities Act of 1933 and in 1934, its Securities Exchange Act created the S.E.C. (S.E.C. 1984, 7).

Prior to the early 1930s, the response to stock-market panics had been to let the victims bear the consequences of their greed and to prosecute frauds and cheats. The new legislation had a revolutionary preemptive orientation: It sought to protect investors *before* they incurred losses, in three ways.

First, to help investors make informed trading decisions, the acts required issuers of securities to provide information about directors, officers, underwriters, and large shareholders, and about the organization and financial condition of the corporation. Issuers were also required to file annual and quarterly reports, following rules prescribed by the S.E.C. Over the years, the S.E.C.’s efforts substantially increased the length and

quantity of the reports companies had to file. For example, companies had to disclose management perks and overseas payments and provide replacement-cost and line-of-business accounting. The laws backed the disclosure rules by providing criminal penalties for making false or misleading statements and by empowering the S.E.C. to suspend the registration of securities.

Second, to discourage insider trading, the laws required every officer, director, and 10-percent equity owner to report the securities they owned. Such insiders had to turn over short-term trading profits (from purchases and sales within any six-month period) to the company. The laws provided criminal sanctions for failure to report such transactions. The S.E.C. has zealously prosecuted the insider-trading provisions of the law and helped send offenders to jail.

Third, the 1934 Securities Act sought to eliminate the “manipulation and sudden and unreasonable fluctuations of security prices.” The law prohibited several practices, such as engaging in transactions to manipulate prices or to create an illusion of active trading; making material false and misleading statements; and spreading rumors about market rigging. Stock exchanges had to register with the S.E.C. and help enforce compliance by exchange members with the securities acts. The S.E.C. could deny registration to any exchange that failed to comply with its rules, and it rapidly used its powers to close nine exchanges. In the late 1930s, Chairman William O. Douglas virtually threatened the New York Stock Exchange with takeover if didn’t reform.

Over the years, Congress also sought to protect investors by regulating the financial institutions that manage funds. For example, the Investment Company Act of 1940 set minimum levels of diversification for mutual funds and precluded them from holding more than 10 percent of a firm’s stock. Complaints about the self-serving management and underfunding of corporate pension funds led Congress to pass the Employee Retirement Income Security Act of 1974 (ERISA). ERISA prohibited pension plans from holding more than 10 percent of the sponsor’s own stock or 5 percent of any other firm’s stock.

Wall Street’s traders, who reflexively resist any form of regulation, in fact owe a great and unacknowledged debt to rules that protect the small shareholder, mutual-fund investor, and pension-fund beneficiary. The S.E.C. reassures the speculators—whose trading is essential to maintain the liquidity of markets—by certifying the integrity of the exchanges. Casinos with reputations for rigged games eventually drive away patrons.

Penalties for insider trading similarly undergird a liquid market in which many buyers bid for stocks offered by anonymous sellers. The fear of trading against better-informed insiders would otherwise lead buyers to demand access to the company's books and to investigate the motivation of the sellers: Do they know something bad about the business or do they just need money? Without insider-trading rules, stock trades, like used-car or real-estate transactions, would probably require protracted negotiation between known parties.

Disclosure rules similarly facilitate trading of the stock of companies that neither buyer nor seller has examined from the inside. The S.E.C.'s vigorous and well-publicized prosecutions of inaccurate or incomplete statements reassure traders that they can buy stocks without independent, time-consuming audits.

The laws that protect mutual-fund investors and pension-plan beneficiaries by enjoining broad diversification of portfolios also subtly contribute to market liquidity. The more investors diversify, the more fragmented the stockholding of any firm. And fragmented stockholding promotes liquidity by increasing the odds of a trade because someone needs the money or believes that a stock is mispriced.

The historical evidence suggests that, without regulation, stock markets would be marginal institutions. Financial markets in Europe and the United States developed around *debt*, not equity. "Prior to 1920," Jonathan Baskin (1988, 222) writes, "there were no large-scale markets in common stock. . . . Shares were viewed as akin to interests in partnerships and were simply conveniences for trading among business associates rather than instruments for public issues." Promoters of canals and railroads—the few businesses organized as joint-stock companies—restricted ownership to known investors whom they believed to be "both wealthy and committed to the enterprise." The public at large perceived equities as "unduly speculative," and "tales of the South Sea fiasco evoked instant horror" (*ibid.*, 216).

Public markets for high-quality *bonds*, however, can be traced back to the 1600s. The first financial instrument to be actively traded in Britain was the national debt, and in the United States, as well, most publicly traded securities consisted of government issues until 1870. Later, railroad debt became popular, and, at the turn of the century, preferred issues financed the great merger wave. It is noteworthy, too, that, unlike the public-equity markets, which would evaporate for long periods following speculative bubbles, debt markets bounced back from serious crises.

The contribution of U.S. regulators to the growth in equities markets can also be inferred from the historic illiquidity of European markets, where restraints on insider trading, disclosure requirements, and manipulative practices were traditionally weak. In the Belgian market, described in 1984 as “a sad, largely deserted place” (Bertoneche 1984), insider trading was considered unethical but not illegal. Most other countries in Europe did not have statutes against insider trading until the mid-1980s, when the European Community directed member countries to adopt a minimum level of shareholder-protection laws. U.S. occupation forces instituted laws against insider trading in Japan after World War II, but officials exercised “benign neglect” of the rules.⁴ And indeed, as American-style securities regulation and enforcement caught on in the rest of the world, the liquidity of stock markets around the world also improved.

Mass Equities Markets and Out-of-Control Capitalism

Unfortunately, there’s a catch to the rules that sustain stock-market liquidity: They also drive a wedge between shareholders and managers. Instead of yielding long-term shareholders who concentrate their holdings in a few companies where they provide informed oversight and counsel, we see diffused, arms-length stockholding. Pension- and mutual-fund rules that require extensive diversification of holdings similarly make relationships with a few managers unlikely. ERISA further discourages pension managers from sitting on boards, for if the investment goes bad, Labor Department regulators may make them prove they had expertise about the firm’s operations. Concerned about overly cozy relationships between unscrupulous fiduciaries and company managers, the regulators have effectively barred all but the most distant relationships.

Similarly, the insider-trading rules place special restrictions on investors who hold more than 10 percent of a company’s stock, serve on its board, or receive any confidential information about its strategies or performance, and require them to report their transactions, forfeit short-term gains, and try to avoid any hint of trading on inside information. But why should investors become insiders and be subject to these restrictions just so that everyone else can enjoy the benefits of a level trading field? They don’t: Institutional investors, with fiduciary responsibilities, usually

refuse to receive any private information from managers. They may grumble about a firm's performance, but they will not sit on its board for fear of compromising the liquidity of their holdings. Institutions also make sure they stay below the 10-percent ownership limit that puts them under the purview of insider-trading restrictions. The rules thus make large investors resolute outsiders. In a free-for-all market, the same institutions would likely demand access to confidential information before they even considered investing.

Disclosure requirements also encourage arm's-length stockholding. For example, rules that mandate the disclosure of transactions with insiders make a firm's banks, suppliers, and customers less willing to hold large blocks of stock or serve on boards. Disclosure rules also make anonymous shareholding safe. If companies' reports were sketchy or unreliable, shareholders would likely demand an inside role and ongoing access to confidential information.

Market liquidity itself weakens incentives to play an inside role. All firms with more than one shareholder face a free-rider problem. The oversight and counsel provided by one shareholder benefits all others, with the result that all of them may shirk their responsibilities. This is particularly relevant if a company faces a crisis. In illiquid markets shareholders cannot run away easily and are forced to pull together to solve any problem that arises. But a liquid market allows investors to sell out quickly and cheaply. In economist Albert Hirschman's terms, investors prefer a cheap "exit" to an expensive "voice."

Diversification rules that cause institutions to fragment their portfolios and the stockholding of the firms in which they invest compound the free-riding problem. The chance that a 20-percent stockholder will expend resources for the benefit of the group is much greater than a 0.1-percent stockholder doing so.

Thanks to these extensive rules, transient outsiders now own a significant share of most publicly held stocks in the United States. The typical institutional investor's portfolio contains hundreds of stocks, each of which is held for less than a year. Institutional investors follow the so-called Wall Street rule: Sell the stock if you are unhappy with management. In countries where American-style rules don't exist, aren't enforced, or have been adopted relatively recently, the situation is different. There we see large investors whose holdings are immobilized by special classes of stock, long-term financing, or other business relationships.

Richard Breeden, a former chairman of the S.E.C., claims that the “closed nature” of foreign governance systems “contradicts U.S. values of openness and accountability” and is “not appropriate to U.S. traditions.” However, the historical evidence suggests that investor-protection rules, not deep-rooted traditions or values, have fostered the unusually fragmented and anonymous stockholding that we find in America today. Before the New Deal, investors who took an active inside role in governance played a major role in financing U.S. industry. DuPont family money helped William Durant—and later Alfred P. Sloan—build General Motors. Investors represented by J. P. Morgan helped Theodore Vail build AT&T and enabled Charles Coffin to create the modern G.E. These investors were in it for the long haul—the DuPonts fought Justice Department efforts to make them sell their G.M. stock—and they played an important oversight role. Pierre DuPont watched over the family investment in G.M. as chairman of its board; he reviewed “in a regular and formal fashion” the performance of all its senior executives and helped decide on their salaries and bonuses. Although he left the details of financial and operating policy to executives, DuPont “took part in the Finance Committee’s critical decisions on important capital investments” (Chandler and Salisbury 1971, 573, 580).

Even today, investors in *private* companies continue the DuPont tradition. Partners in venture-capital firms, for instance, serve as active board members of their portfolio companies, help recruit and compensate key employees, work with suppliers and customers, and help develop strategy and tactics (Gorman and Sahlman 1989). The investment strategy of Berkshire Hathaway’s Warren Buffett also suggests that Pierre DuPont’s careful oversee approach conflicts more with U.S. regulations than with the traditions or values that Breeden invokes. Buffett isn’t subject to the same regulatory pressures to diversify as the typical pension-fund manager; he and his long-term partner and vice-chairman, Charlie Munger, own well over half of Berkshire’s stock. Berkshire seeks to “own large blocks of a few securities we have thought hard about,” writes Buffett (1987, 83). Buffett serves as a director of the companies that constitute Berkshire’s core holdings and will, in a crisis, intervene to protect his investments. For example, during the government-bond-auction scandal at Salomon Brothers, he stepped in as chairman to help effect sweeping changes in management. Apparently, Buffett’s large holdings of Berkshire’s stock (and the tax consequences of realizing gains) make him more willing than other institutional investors to submit to

the liquidity-reducing rules that insiders face. His favored holding period is “forever. . . . Regardless of price, we have no interest at all in selling any good businesses that Berkshire Hathaway owns, and are very reluctant to sell sub-par businesses. . . . Gin rummy managerial behavior (discard your least promising business at each turn) is not our style” (ibid., 52).

The absence of close, long-term manager-shareholder relationships that has become the norm in publicly traded companies in the U.S. has significantly impaired their governance. The basic nature of executive work calls for intimate relationships; anonymous masses of shareholders cannot provide good oversight or counsel and often evoke mistrust and hostility.

Managers aren’t like agents who execute specific tasks under the direction of their principals. Like doctors or lawyers in relationship to their patients or clients, they have a broad responsibility—a fiduciary one—to act in the best interests of stockholders. As with other fiduciaries, their performance cannot be assessed according to a mechanical formula. Shareholders, on the other hand, must weigh the outcomes they observe against their guesses about what would have happened if managers had followed other strategies. Losses do not necessarily establish managerial incompetence because the alternatives might have been worse. If concrete performance objectives are set, shareholders have to judge whether managers are playing games with the targets: for example, if they are meeting cash-flow goals by skimping on maintenance.

To make fair evaluations, therefore, shareholders must maintain a candid dialogue with managers. But a candid dialogue between managers and arm’s-length shareholders is impossible. Practically speaking, diffused shareholders cannot have much contact with senior executives: In the typical public company, most retail shareholders have no idea who is running the company, and most institutional investors catch, at best, only an occasional glimpse of the CEO in a carefully staged road show or a presentation to analysts. Neither can managers share sensitive data with shareholders at large; indeed, managers must *conceal* strategic information from them. If a company wants to convince potential buyers that its new product is here to stay, its managers cannot reveal to stockholders that early sales have been disappointing. Managers are forced to be circumspect; they can’t discuss critical strategic issues in public, and insider-trading rules discourage private communications. Almost inevitably, their dialogues with the investment community revolve around quarterly

earnings-per-share estimates, even though both sides know well that those figures have little long-run significance.

How wholeheartedly managers will advance the interests of anonymous shareholders is also questionable. Basic honesty and concern for their own reputations, as well as fear of public censure, inhibit flagrant disloyalty and fraud; but the abuses that shareholders must worry about are often more subtle. CEOs who use corporate jets to fly their dogs around patently abuse shareholders. But having CEOs wait in airports for standby seats more subtly ill serves shareholders. Where and how do managers draw the line?

The identity and values of the particular people whose approval managers seek has a great influence on these choices. CEOs who want to impress other CEOs, and who have no contact with their shareholders, will find it easier to convince themselves that well-appointed corporate jets will make them more productive. Executives who know their stockholders and value their esteem will probably provide more careful stewardship. Similarly, shareholders are more likely to ascribe poor performance to managerial incompetence than to bad luck if their perceptions have been shaped by colorful reports in the press instead of personal relationships with a company's managers.

Unfortunately, thanks to the rules, American managers and shareholders now regard each other with suspicion. CEOs complain that investors are fixated on quarterly earnings and are ignorant of companies' markets, competitive positions, and strategies. Investors see many CEOs as entrenched, overpaid, and self-serving. As Peter Lynch, the former manager of Fidelity's Magellan Fund, half-jokingly remarked, "I only buy businesses a fool could run, because sooner or later one will." Conversely, CEOs could well have asked how Lynch even remembered the names of the 1,000 or so stocks in which his fund invested.

The alienation of stockholders and managers makes public-equity markets an unreliable source of capital. Surprisingly, the exceptional liquidity of U.S. markets apparently does not compensate for the problems that come with issuing equity shares. Thus, American corporations are no different from the large public corporations of other major industrialized nations in issuing common stock to raise funds "only in the most exigent circumstances," and "the quantity of funds raised by new equity issues—especially by established firms—appears to be relatively insignificant" in all countries, regardless of the liquidity of their stock markets (Baskin 1988, 213). The stock market does, on occasion, allow

firms in fashionable industries to issue stock at lofty prices. But such instances usually represent episodes of “market mania,” which underwriters call “windows of opportunity.” When the window closes, investors dump the stocks wholesale and don’t give the category another chance for a long time.

On the downside of issuing shares, arm’s-length stockholding subjects managers to confusing signals from the stock market. It isn’t that Wall Street is short sighted—in fact, the market often values favored companies at astonishing multiples of their future earnings. But companies fall in and out of favor unpredictably: The market abruptly switches from taking a rosy long-term view of biotechnology to a fascination with Internet companies. Understandably so, for without inside knowledge of companies’ strategy and performance, investors have little choice but to follow the crowd.

Managers, in turn, pursue strategies to protect “their” companies against apathetic or fickle investors. Uncertain about access to capital when the firm might need it, managers avoid paying out earnings to stockholders even when it does not. They reinvest profits, sometimes in marginal projects, and outside shareholders can do little about the situation.

In the 1960s, for example, managers of cash-rich companies in mature industries made acquisitions in businesses that were unrelated to their core capabilities. The result was many conglomerates of unmanageable size and diversity. As historian Alfred Chandler (1990) observes: “Before World War II, the corporate executives of large diversified international enterprises rarely managed more than 10 divisions. . . . By 1969, many companies were operating with 40 to 70 divisions, and a few had even more.” Top management often had “little specific knowledge of or experience with the technological processes and markets of the divisions or subsidiaries they had acquired.” In more recent periods, the managerial propensity to retain earnings has led to investment in businesses that should be shrunk. “In industry after industry with excess capacity,” Michael Jensen (1993) writes, managers “leave the exit to others while they continue to invest,” so that they will “have a chair when the music stops.” Thus, the workings of a stock market that supposedly facilitates capital flows actually helps immobilize capital within companies.

Investor indifference and hostility are also reflected in operating inefficiencies. Apparently, many managers don’t try very hard to please anonymous shareholders. Several studies have documented dramatic

improvements in profit margins, cash flows, sales per employee, working capital, and inventories and receivables after leveraged buyout transactions that replaced diffused public stockholders with a few private investors.

What about the so-called “market for managerial control”? How can CEOs who provide poor stewardship survive the unsolicited tender offer, which supposedly represents “the most effective check on management autonomy ever devised” (Rappaport 1990)?

Actually, unsolicited tender offers comprise a tiny fraction of takeover activity. Most mergers are friendly affairs, negotiated by executives of established companies seeking well-managed, profitable targets for which they are willing to pay premium prices. The managerial club frowns on hostile offers. The few profit-motivated raiders serve as a check only against flagrant incompetence and abuse. This is because they operate under significant constraints: They have to raise money, much of it in the form of high-yield debt, deal by deal, making their case from publicly available data. Even at their peak, in the mid-1980s, raiders posed a threat only to a small number of targets: those diversified firms whose break-up values could be reliably determined from public data to be significantly higher than their market values. They could not and did not go after turnaround candidates any more than friendly acquirers do.

Outside shareholders, analysts, and takeover specialists cannot easily distinguish between a CEO’s luck and ability. Again, Warren Buffett, because he was a director and major investor in Salomon Brothers, could much more easily assess the culpability of the Salomon’s CEO and the consequences of replacing him than outside shareholders could. Judgments of managers are necessarily subjective and require considerable confidential and contextual information.

By contrast, the case of I.B.M. dramatizes the inadequacies of external scrutiny. Between the summers of 1987 and 1993, I.B.M.’s stock lost more than 60 percent of its value while the overall market rose by about the same degree. The magnitude of I.B.M. shareholders’ losses was comparable to the GDP of several OECD countries. But while its stock price relentlessly declined, I.B.M.’s management did not face the least threat of a hostile takeover or proxy fight. Outsiders had no way of knowing whether or not managers were struggling, as competently as they could, with problems beyond their control. Ultimately I.B.M.’s fortunes turned—not because of a new strategy demanded or imposed by a raider, but because of the fortuitous appointment of Lou Gerstner as its CEO.

Banks and other financial service firms, it is important to note, are virtually immune to even the limited restraints imposed by hostile takeovers. As mentioned, raiders use high-yield debt (a.k.a. “junk”) to finance their takeovers. But relying on a bank’s “unused” debt capacity to take it over is difficult, because most banks are already very highly leveraged: They have just a small sliver of equity in their capital structures. The takeover of a financial institution also has to be approved by bank regulators, and they will not approve a transaction that involves loading on more debt. As a result, there is no recorded instance of a large U.S. financial institution that has been the target of a serious tender offer by a raider. Bank CEOs usually lose their jobs only when calamitous performance has forced their boards of directors into action.

Another noteworthy consequence of the reassurance provided by the rules (and academic theories) encouraging diversification has been the increase in what is euphemistically called market “breadth.” Differently put, in the 1980s and 1990s, the ranks of publicly listed companies were swollen by businesses that simply didn’t belong. After 1979 IPOs increased from about 140 to nearly 600 per year, a process that culminated in the Internet bubble, when companies with no profits and tiny revenues famously went public. But it wasn’t just dot-coms. Investment banks such as Salomon Brothers, Morgan Stanley, and Goldman Sachs that had flourished as private partnerships also went public. After centuries of having to worry about their own capital, bankers were free to play “Heads we win, tails public stockholders lose.” That became an important source of the recent crisis.

Making—and Then Breaking—the Banks

Defective regulation of the classic function of banks—deposit taking and lending—has done even greater harm to the financial system than the impairment of shareholder-manager relationships. Here the problem has been half-heartedness, not the overzealousness that has characterized the S.E.C.

The case for deposit insurance in conjunction with tough regulation of bank lending was and remains strong. There is a lot to be said for the enforcement of prudence by a steadfast regulator rather than by many fickle depositors. But thanks to the progressive weakening of the rules, the system has little of either depositor monitoring or regulatory

oversight. The weakening of banking rules has undermined long-term relationships between borrowers and lenders and fostered an arms-length securitized credit system—just as the strengthening of securities laws has undermined close stockholder–manager relationships.

The classic structure of a bank, offering liquid demand deposits on one side and making illiquid loans on the other, has been a puzzle to economists: Why staple these two functions together? Various ingenious rationales have been suggested for the existence of the organizational form (Rajan 2006, 325–26), but in reality the form is inherently fragile. While it can play a valuable economic role in channeling saving, it does tend to collapse without careful regulation. The “free-banking” era of the nineteenth century was inherently unstable. In good times, unfettered competition between banks encouraged a race to the bottom in lending. But at the slightest whiff of trouble, depositors (who knew that most of the bank’s assets were illiquid) would rush to withdraw funds, before someone else emptied the limited cash in the till that was held as reserves. The problem of retaining depositor confidence was especially acute in a rapidly industrializing economy. In small agrarian communities, depositors often personally know their bankers and can assess the prudence of their lending practices; with borrowing by large dispersed organizations, that’s impossible.

The banking system was ultimately stabilized in the United States by New Deal rules that protected depositors from imprudent bankers—and bankers from jittery depositors. A cornerstone of the new rules, the Banking Act, established the Federal Deposit Insurance Corporation in 1933—the same year as the first Securities Act. Its provisions were controversial. According to an official F.D.I.C. history, opposition to the Banking Act “had earlier been voiced by the President, the Chairman of the Senate Banking Committee and the American Bankers Association” because “they believed a system of deposit insurance would be unduly expensive and would unfairly subsidize poorly managed banks.” Public opinion was “squarely behind a federal depositor protection plan,” however, after the failure of more than 9,000 banks between the stock market crash in October 1929 and March 1933, when President Roosevelt had declared a bank holiday (F.D.I.C. 1984, iii).

Unlike the preemptive approach to investor protection taken by the Securities Acts, the idea of deposit insurance wasn’t revolutionary. Starting in 1829, according to the F.D.I.C. (1984, 3), New York and then the thirteen other states had experimented with guaranteeing deposits,

but the schemes “had proved unworkable” and all had ceased operations by the early 1930s. At the federal level, 150 proposals for deposit insurance had been made in Congress between 1886 and 1933, many prompted by the financial crises and bank runs that were a recurring feature of the time (*ibid.*).

Nor was the notion of regulating banking practices novel. In the early 1800s, state legislators required banks to submit financial reports that were used to monitor banks’ compliance with their charters. New York’s 1829 Safety Fund both established a system for regular bank examination and the first system of deposit insurance. Because New York banks had to pay for the insurance, they had a stake in limiting losses by means of good supervision. But later, as the state insurance schemes ended, so did their supervisory complements. States did, however, create systems of bank supervision that weren’t tied to deposit insurance, and by 1914 every state was conducting regular bank examinations. Federal supervision of banks started with the National Currency Act of 1863, which authorized national banks and created the Office of the Comptroller of the Currency (O.C.C.) to supervise them. Legislation creating the Federal Reserve System in 1913 created a second federal agency with the right to examine banks that were members of the system. The Federal Reserve was more concerned with its role as central banker, though, and did not exercise these powers until the 1930s.

But although deposit insurance and bank supervision weren’t new, the ambition and scope of the 1933 and 1935 banking acts were unprecedented. Besides establishing a national system of deposit insurance, the 1933 so-called Glass-Steagall Act ordered the separation of investment from commercial banking. In order to “forestall ruinous competition among banks,” it outlawed the payment of interest on demand deposits, and it authorized the Federal Reserve Board to set ceilings on time-deposit rates. The 1935 Banking Act expanded the F.D.I.C.’s supervisory powers, set more rigorous standards for deposit insurance, and extended deposit-rate controls to banks that had been exempted in the 1933 Act.

Out of the large and inevitably uneven menu of New Deal initiatives, the banking legislation was arguably the most effective. The rate of bank failure “dropped precipitously” (F.D.I.C. 1984, iii); in 1934, only nine insured banks failed. Improvement in economic conditions also helped stabilize banks: Unemployment fell sharply after 1933, and real GDP expanded at an annual rate of 9.5 percent from 1933 to 1937. Banks faced another test in the second leg of the Depression, in 1937–38, but came

through without difficulty. During World War II, when business activity was vigorous and banks financed the federal government's war effort, loan losses and deposit outflows were negligible. Only twenty-eight insured banks failed during the war years (*ibid.*).

Banks were well positioned to finance the "spending spree" that occurred after the war. Some questioned whether banks would resume their traditional lending instead of buying the government's war bonds, but "these concerns proved groundless" (F.D.I.C. 1984, 6). Bank lending increased by nearly two and a half-fold in the 1950s, growing at an annualized rate of over 9 percent a year. Apparently, satisfying bank examiners rather than jittery depositors was liberating. Yet there were very few bank failures: Only five banks failed in 1955, the high-water mark of the 1950s. In fact, the low failure rate concerned some. In a 1963 speech, Wright Patman, the Chairman of the House Banking Committee, came out in favor of more bank failures. "The record of the last several years of almost no bank failures and, finally last year, no bank failure at all," said Patman, "is to me a danger signal that we have gone too far in the direction of bank safety" (*ibid.*, 7). In fact, however, the proportion of bad loans had increased. The ratio of loan losses to total loans grew from .16 percent in 1950 to .25 percent in 1960. But even the higher ratios did not jeopardize the solvency of the banking system.

The Beginnings of Deregulation

In the 1960s, according to the F.D.I.C.'s history (1984, 7), banks started to change. A new generation of bankers who hadn't experienced the Depression "abandoned the traditional conservatism that had characterized the industry" and "began to strive for more rapid growth in assets, deposits and income." Large banks led the trend towards "aggressiveness and risk taking" and "began pressing at the boundaries of allowable activities," expanding into fields involving "more than the traditional degree of risk for commercial banks." Depression-era rules to limit "ruinous" competition were also relaxed: States liberalized branching laws and bank-holding companies were created as vehicles for multi-office banking and for entering new product markets. Banks did face some new rules, but these were intended to improve consumer protection and securities disclosure rather than prudence. Nonetheless, banks weren't "noticeably harmed" by increased risk-taking in the 1960s.

Loan-loss ratios did not grow in spite of another two and a half-fold increase in lending because, according to the F.D.I.C., “favorable economic conditions” allowed “marginal borrowers to meet their obligations. With the exception of relatively mild recessions, the economy produced high levels of production, employment and income during most of the period.”

Loan losses and bank failures jumped in the 1970s. The ratio of loan losses to total loans had never exceeded .27 percent in the 1950s and 1960s. In the 1970s the ratio never fell below .33 percent, and in 1975 and 1976 the ratio exceeded .65 percent. The frequency of bank failures likewise increased, as did the size of the failing banks.

The greater severity of economic downturns was an important reason for higher loan losses and bank failures in the 1970s. The increased risk-taking that hadn't hurt banks in the more forgiving climate of the 1960s now resulted in more defaults. Large banks and banks with large real-estate exposures were particularly hard hit. Banks were also squeezed between new competition from “securitized” credit and unprecedented inflation. Money-market funds, the first of which was launched in 1970, attracted deposits away from banks and purchased short-term instruments that substituted for bank loans. Because these funds didn't incur the costs of due diligence or maintaining loan-officer relationships, they had a natural advantage in attracting deposits from banks because they could pay higher rates. Also, unlike banks, money-market funds were free to pay high rates. Recall that thanks to the Banking Acts' efforts to control “ruinous” competition, regulators had imposed ceilings on the rates that banks could pay.

As non-banking entities, money-market funds enjoyed other subtle advantages. They didn't have to pay the F.D.I.C. for deposit insurance or maintain non-interest-bearing reserves to cover losses or unexpected withdrawals. They weren't subject to regular examination by multiple regulators. And they didn't have to comply with consumer-protection rules, or demonstrate their contribution to the local community. True, they couldn't offer deposit insurance; but they did carry a regulatory imprimatur: They were supervised by the S.E.C. under the 1940 Investment Company Act. Apparently this was good enough for many depositors, either because they couldn't understand the difference between F.D.I.C. insurance and S.E.C. regulation, or because they astutely realized that whatever the legal differences, the government would make them whole if disaster struck.

Inflation amplified the funds' advantages. In 1971, the United States went off the gold standard and adopted a regime of floating exchange rates. In 1973, Arab states placed an embargo on oil exports to the America and other Western countries in response to their support of Israel in the Yom Kippur War—and possibly to try to recoup the losses they had suffered from the reduced value of a freely floating dollar. Oil prices rose substantially, from \$3 a barrel to \$12, triggering first a recession and then, after significant monetary easing by central banks, high inflation. High inflation, in turn, encouraged the flow of funds from banks to money-market funds, because depositors earning low nominal rates of interest in banks faced a loss in the real value of their savings. At the same time, banks couldn't get rid of their thirty-year mortgages and other loans that had been made at rates below the new rate of inflation. Even if the borrowers were sound, therefore, these loans were effectively “underwater.”

The banking problems of the 1970s, like those of the early 1930s, elicited a vigorous legislative and regulatory response. Congress passed five relevant laws between 1980 and 1991⁵ and considered significant bills in nearly every session. Regulatory change was equally extensive. Federal banking agencies proposed and implemented new changes under the new laws as well under the authority of old statutes (F.D.I.C. 1997, 87). But there was a basic philosophical difference between the New Deal rules and those adopted during and after the 1970s. The 1933 and 1935 Acts sought to limit competition and other stimulants and opportunities for imprudent lending. The reformers of the Carter administration—and their allies in Congress—believed in the curative and prophylactic benefits of deregulation and market mechanisms in several fields, including trucking, commercial aviation, and finance. The same approach was even more vigorously pursued by the Reagan administration and continued during the Bush I, Clinton, and Bush II presidencies.

In the new orthodoxy, banks weren't the victims of predation by free-riding money-market funds. Rather, banks had “earned monopsony profits by being able to acquire deposit funds at below-market rates,” while money-market funds were “market innovations” that helped undercut these excess profits and paid depositors attractive rates (Berger, Kayshap, and Scalise 1995, 61). What was needed was even more competition for depositor funds. Similarly, commercial paper and other such securitized forms of debt, such as the “junk bonds” pioneered by Drexel Burnham Lambert's Michael Milken in the late 1970s, were thought to offer better risk-bearing than the loans they replaced. While a bank

would bear the entire risk of a loan that it made to a company, the risks of commercial paper issued by the company could be widely distributed across many purchasers. And by facilitating the diversification of credit risks, securitization reduced borrowing costs. The policy implication was that rather than shield banks from securitization, the rules should be changed to allow banks to participate in the revolution by scrapping provisions of the 1933 Banking Act that separated commercial and investment banking.

To the degree that banks couldn't securitize and sell off all their assets, fans of new finance advocated more diversification of their activities and better use of innovative risk-management technologies and markets. For instance, it was argued that banks could have mitigated the 1970s problem of holding fixed-rate mortgages when interest rates were rising if they had been more diversified and had used interest-rate futures (which had then just started trading in Chicago) to hedge their risks. Again, the solution was allowing banks to enter new lines of business more freely, and easing regulatory constraints on the development of new risk-management tools and markets.

The first major legislation of the 1980s, the Depository Institutions Deregulation and Monetary Control Act (DIDMCA), was signed into law by President Jimmy Carter on March 31, 1980. The DIDMCA allowed banks to start offering competitive rates on checking accounts and mandated that all other interest-rate limits (administered through "regulation Q" ceilings) be eliminated by March 1986. The Depository Institutions Act (known as the Garn-St. Germain Act), enacted in 1982, allowed banks to offer accounts that, like money-market funds, had no reserve requirements or restrictions on rates. Garn-St Germain also eliminated statutory restrictions on real-estate lending by national banks that had imposed maximum loan-to-value ratios and required repayment of the principal within thirty years for many kinds of loans. Instead, the 1982 Act delegated the authority to set such rules to the O.C.C. In response, the O.C.C. proposed a regulation that imposed no limitations on real-estate loans, because it believed limits had hampered banks' ability to respond to changes in real-estate markets, and believed also that decisions about lending policies were the responsibility of bank management.

A controversial proposal to grant commercial banks new powers to underwrite securities and deal in mutual funds, and thus repeal important provisions of the Glass-Steagall Act's separation of commercial and investment banking, didn't make it into the final version of Garn-St

Germain. The Reagan Administration was strongly in favor, as was Senator Jake Garn, who had just become chairman of Senate banking committee. In fact, Senator Garn made the expansion of banks' powers a priority of his chairmanship. But the securities and insurance industries lobbied against legislation that would allow banks to enter their businesses. And some influential voices in Congress, notably Senators John Heinz and William Proxmire and Representatives Fernand St Germain and John Dingell, argued that expanded banking powers would inject too much risk into the system.

No effort was made to dilute the deposit-insurance provisions of Glass-Steagall. The 1933 legislation limited insurance coverage to \$2,500 for each depositor. The coverage limit was then raised to \$5,000, effective June 30 1934. Subsequent increases, to \$10,000 in 1950, \$15,000 in 1966, \$20,000 in 1969, and \$40,000 in 1974, usually reflected changes in price levels. As a practical matter, though, there was no limit, because of the way the F.D.I.C. handled bank failures. Rather than close down a failed bank and pay off depositors up to the limit of their insurance, the F.D.I.C. facilitated its merger with a healthy bank, which would pay off the failed bank's deposits. The de-facto unlimited coverage concerned the F.D.I.C. (and others), who believed that it discouraged large depositors from scrutinizing the lending practices of their banks, and thus deprived regulators and small depositors (who were presumably entitled to a free ride) of an additional level of monitoring. One of the goals of deregulators in the early 1980s was to increase the level of monitoring by depositors (which was regarded as "market based") and thus reduce the role of regulators. Yet in spite of concerns about depositor complacency, the 1982 Garn-St Germain Act more than doubled the insurance limit, from \$40,000 to \$100,000. The Chairman of the F.D.I.C. had testified that an inflation adjustment could justify an increase to \$60,000, and the initial proposal in the Senate bill was for an increase to \$50,000. This was increased to \$100,000 at a late-night House-Senate Conference. The beleaguered savings and loan industry had lobbied for the increase in the hope that it would help attract and keep large deposits that would otherwise go into money-market funds (F.D.I.C. 1997, 93).

The assurance provided by high *de jure* and *de facto* deposit-insurance limits also likely had the unintended consequence of facilitating the use by banks of new markets and instruments. This had both good and bad consequences. With more stringent depositor discipline, it is unlikely that banks could have used the futures markets that emerged in the 1970s to

hedge the risks of making long-term loans with short-term deposits. Without generous insurance limits most depositors, even sophisticated ones, would likely have shunned banks that traded futures. Paltry pass-book rates simply wouldn't compensate for the risks. Later depositor complacency also allowed banks to take their chances with much racier and more opaque derivatives.

After 1982, the main objective of proponents of deregulation was to "repeal Glass-Steagall and expand the powers of banks." But a thrift and banking crisis intervened and none of the subsequent bills enacted in the 1980s had significant deregulatory provisions. "Deregulation remained an undercurrent" in Congress, however, and some skeptics were converted to the cause. In 1988 for instance, Senator Proxmire promoted legislation that would undo some of the limitations on banking powers (F.D.I.C. 1997, 88). Federal regulatory agencies—the O.C.C., the F.D.I.C., and the Federal Reserve Board—increasingly interpreted existing statutes to grant banks under their jurisdiction entry into new areas. During the early 1980s, national banks were authorized to offer discount-brokerage and investment-management services, operate futures brokerages, and underwrite credit life insurance. A 1990 article in the *Banking Law Journal* argued that, for all practical purposes, most Glass-Steagall restrictions on bank powers had been repealed by "regulatory and judicial reinterpretation" (Kaufman and Mote 1990).

State legislators and banking authorities also contributed to the deregulation movement. State chartered non-member banks (i.e., those that didn't belong to the Federal Reserve System) had always been exempt from Glass-Steagall. In the 1980s, states increasingly allowed state-chartered banks to enter into securities, insurance, and real-estate activities that were not permitted by federal statutes. By the end of the decade, 29 states had given state-chartered banks at least some power to underwrite securities, and all but seven states had allowed banks to engage in securities brokerage. Half the states permitted some form of real-estate development, and six allowed insurance underwriting beyond credit life insurance.

A 1995 Brookings Institution paper described the "transformation" of U.S. banking over the previous fifteen years—which the authors attributed mainly to regulatory changes such as the deregulation of deposit accounts and the expansion of bank powers, which led to a "tremendous explosion" in the number of products, such as derivatives, that banks could hold and offer. In this transformation, U.S. commercial banks lost about a third of their share of total credit-market debt from 1979 to 1984;

apparently, in spite of the deregulation of interest rates, the process of “disintermediation” by non-bank competitors and the replacement of bank loans by securitized debt that had started in the 1970s did not abate.

As the share (and profitability) of traditional lending declined, banks significantly increased their derivatives activity. Megabanks were at the forefront: In 1983, the notional value of their derivatives positions amounted to 82.3 percent of the value of their assets, whereas in 1994 derivatives in megabanks amounted to more than eleven times the value of their assets. Correspondingly, “other non-interest income,” such as fees earned from issuing counterparty guarantees and derivative instruments earned by mega-banks, increased from 7.0 percent of operating income in 1979 to 20.9 percent in 1994 (Berger, Kashyap, and Scalise 1995, 68).

The second half of the 'nineties and the first half of the 'naughts, which spanned the Democratic Bill Clinton and Republican George W. Bush administrations, saw much more of the same. New forms of multi-layered debt securitization took off. The early forms of debt securities had been issued by large businesses as a substitute for bank credit, and thus had helped disintermediate the banking system. For instance, General Motors would issue commercial paper directly to investors instead of securing a short-term loan from its bank. Later, securitized debt was issued not by the ultimate users of the funds but rather by intermediaries who used the proceeds to extend credit. The origins of these so-called intermediated “asset-backed securities” (ABSs) go back to the 1970s, when federally sponsored agencies such as Fannie Mae and Freddie Mac pooled residential mortgages and sold off interests in these pools to investors (using the proceeds to make more mortgage loans). Eventually other kinds of financial assets were pooled into ABSs. By the late 1980s, ABSs had become a viable means for commercial banks and other private lenders to package and sell off other kinds of debts such as car loans, credit-card balances, mortgages on commercial properties, and lease receivables. By 2002, privately issued ABSs accounted for about a quarter of the entire corporate-bond market. ABS issuers also became dominant issuers of short-term paper: In 2002, securitized pools of loans represented nearly half of commercial paper outstanding. Other kinds of short-term paper issued by financial institutions had also grown, so that in 2002 the share of commercial paper accounted for by industrial companies (and other non-financial entities) had fallen to a fifth of the total.

The widening range of ABSs involved a progressive increase in the riskiness of the assets that backed the securities and an increase in the

number of layers between the ultimate users and investors. In the 1980s ABSs mainly comprised packages of low-risk loans issued by “brand-name” intermediaries with high credit ratings. The creditworthiness of an ABS was also typically “enhanced” by guarantees, provided by banks or insurance companies, that they would pay for some or all of the losses arising from the default of the loans. Later, new techniques involving complex structures were used to securitize increasingly higher-risk loans. For instance, the loans might be placed in a “special-purpose vehicle”; the special-purpose vehicle would then issue multiple classes of securities with different levels of risk and return. The top level, for instance, would have the first claim on the cash flows generated by the loans, enabling that security to get a high credit rating from the rating agencies. Interest rates paid to investors in this secure, “senior” or “super-senior” tier were accordingly low. The cash flows left over for the lower levels were of course riskier, had low credit ratings, and paid higher interest rates. Famously, this sort of slicing and dicing enabled supposedly rock-solid AAA securities to be extracted from highly risky subprime mortgages.

The new kinds of securities, which were then often packaged and repackaged, also spawned new derivative contracts that could be used to hedge them—and, to an even greater degree, to take speculative side bets on the prices of the securities. The now-notorious credit-default swaps (CDSs), for instance, were sold as insurance (by companies like A.I.G.) against events such as missed payments or credit downgrades. Often the insurance purchased amounted to ten or more times the value of the underlying security, suggesting that most of the purchasers were buying CDS contracts just to bet on bad things happening to the security.

Speculative side-bets typically dominate hedging transactions in traditional agricultural and interest-rate futures markets. In fact, the frenetic buying and selling of futures by day traders is necessary to provide liquidity to these markets, and contracts that fail to attract day traders are dropped from the exchanges, whatever their value might be as hedging instruments. Examples of contracts that failed to survive because they could not attract the necessary volume of day trading (in spite of considerable promotion by the exchanges) are the Consumer Price Index contract (championed by Milton Friedman), contracts on a corporate-bond index, and contracts on an index of municipal bonds. And hedgers have to somehow cope with the mismatch between the popular contracts that survive and their own positions. For instance, those who use futures to hedge the risks of their bond holdings have to live with the fact that the prices of their specific

issues may not correlate perfectly with the limited menu of futures traded on the exchange.

Thanks to lobbying by their promoters, CDSs and other such derivative products escaped regulation by the Commodities Futures Trading Commission,⁶ and instead were traded in the unregulated “over-the-counter” (OTC) market. One obvious result was the absence of the daily settling up of gains and losses through an exchange. In OTC markets, buyers and sellers settle up with each other according to the terms of their bilateral agreements. This can create counterparty risks: If the bilateral agreements are not well drafted or diligently adhered to, one or the other party may not be able to collect what it is owed by a trading partner who goes bust. The OTC market also provided a home for a much larger number of contracts than could the commodities exchanges. The large number meant that speculators and hedgers could find instruments that more precisely fit their preferences. With exchange-traded contracts, participants have to adapt to whatever contract best suits their needs from a relatively small menu. For instance, a speculator or hedger who would like to trade a thirty-year U.S. government bond may have to make do with a futures contract that is actually best linked to a bond with a twenty-year maturity.

At the same time, the dispersion of whatever interest day traders might have had in OTC derivatives meant that the liquidity in any one type of them was low. Direct transactions between buyers and sellers rather than through an exchange also contributed to illiquidity and settling-up problems in the following way: In exchange-traded contracts, anyone who can post the necessary margin can buy or sell. Direct trading in CDSs limited the players to a relatively small number of professionals; within this circle, anyone who could pay the premiums could buy insurance on the default of a security, but not everyone had the credibility to sell insurance. This asymmetry further limited active trading. The absence of a deep secondary (or “resale”) market did not seem to hold back buying derivatives in huge volumes, however: Credit-default swaps were reportedly invented in 1997. Ten years later CDSs outstanding had grown to about \$62 trillion.⁷

Large commercial banks and bank holding companies played an important role in the growth of the ABS and derivative markets ever since they first packaged and sold off their auto and consumer loans. Regulatory reinterpretations and new laws continued to expand the role banks could play in such non-traditional activities thereafter. In 1996, for instance, the

O.C.C. reinterpreted its “incidental” powers, granted under the National Banking Act of 1864, to permit operating subsidiaries of national banks to underwrite municipal revenue bonds, corporate bonds, and even equity securities. The O.C.C. also decided that some products, like annuities, were banking rather than insurance products and could thus be sold by banks. The November 1999 enactment of the Gramm-Leach-Bliley Act (GLBA) formally repealed the long-eroded Glass-Steagall prohibitions on the mixing of banking with securities or insurance businesses. GLBA, for instance, permitted the creation of a new kind of holding company: one that could own, as subsidiaries, banks and other entities that could engage in a variety of financial activities (including underwriting and dealing in securities; sponsoring and distributing mutual funds; insurance underwriting and agency activities; and merchant banking) that banks or their subsidiaries might be otherwise forbidden from performing.

Megabanks and their holding companies, like Citigroup and J. P. Morgan, were at the forefront of taking advantage of deregulation. CDSs, in fact, were invented by a J. P. Morgan team, not by a traditional investment-banking firm. The ratio of non-interest income to banks’ total operating income continued to rise at the same rapid rate in the ten years after 1994 as it had in the previous decade, thanks to the continued rapid growth of activities such as securitization and trading. As before, the largest banks took the lion’s share: for instance, the top five banks accounted for more than 80 percent of total trading revenues earned by all commercial banks in 2001 and nearly two thirds of all securitization income.

The profits of the commercial banking sector as a whole rebounded strongly in the second half of the 1990s, as it recovered from problems it had faced in the early 1990s because of falling real-estate prices and a recession. Commercial banks’ share of finance and insurance-industry profits, however, fell as investment banks’ share rose. As a 2004 F.D.I.C. research paper (Samolyk 2004, 54) observed, in the 1990s, while banks were “returning to record-setting earnings,” investment banks and other financial-service providers were regaining their even higher prior earnings levels. But in the early 2000s, as banks continued their expansion into non-traditional domains such as securitization and the trading of derivatives, the growth in their profits “outpaced that of other financial sectors.”

The profits from securitization and derivatives, however, came with much higher risks, although the subtle nature of these risks may have caused banks and their regulators to ignore them. For instance, banks

were more willing to offer “subprime” mortgages to borrowers who would not qualify for regular mortgages, because these mortgages could be packaged and sold instead of being held to maturity. Although banks wouldn’t receive interest payments, they would earn underwriting fees for originating subprime mortgages, and possibly ongoing fees for servicing them—all without taking the risk that the borrower would default. Involvement in securitization posed several other kinds of risks, however. Banks would sometimes provide “credit enhancements” to ABSs, which created some exposure to defaults. There was also the risk of financing warehouses of loans awaiting securitization. Loans that went into ABSs could not be securitized as soon as they were made, and besides carrying their own loans, banks sometimes extended credit against the inventory of other originators. In principle, these were well-secured short-term credits. But as banks were to discover in the financial crisis, when the ABS market seized up, they could find themselves locked into warehouses containing large quantities of low-credit loans.

In complex, sliced-and-diced ABSs, banks would often have to keep the thinner but most risky slices in order to encourage others to buy the thicker, less risky ones.⁸ And even as banks sold off to investors low-risk slices of packages of loans they had originated, they would often turn around and buy slices of someone else’s packages. Thus, banks were simply swapping the credit risks of the loans they had originated for the credit risks embedded in an ABS.

New derivatives such as CDSs created opportunities to speculate with virtually unlimited leverage and could thus generate huge profits or losses. Yet, as we have seen, with a large number of derivatives traded over the counter (instead of the small number that typically survives the Darwinian selection of trading on an exchange), liquidity was low. Low liquidity made highly leveraged trading especially risky. For instance, speculators could—and often did—purchase default insurance amounting to many times the total issuance of a security. But in the absence of a liquid market, they could not easily reverse the trade. Risk management was also challenging. In a liquid market, positions can be accurately “marked to market” by the minute. With illiquid derivatives, however, traders could hide losses by asserting, like the Red Queen, that the value of their positions was whatever they said it was. Unreliable prices also made end-of-the-day settling-up of gains and losses more difficult and exacerbated the counterparty risks that are an unavoidable feature of OTC trading. Banks were therefore exposed not only to their own

trading mistakes but also to the missteps of their trading partners: If a hedge fund (such as Long-Term Capital Management) or an investment bank (such as Bear Stearns) couldn't honor its trading obligations, commercial banks would often be left holding the bag.

The Interaction of Equities Regulation and Banking Deregulation

Here, at last, the tight regulation of equities markets, leading to diffuse, hands-off monitoring of corporate management, comes together with financial deregulation: Commercial banks' CEOs weren't concerned about the escalation of risks. Freed of stockholder restraints (thanks to the Securities Acts) and depositor restraints (because of the Banking Acts), banks became sprawling, too-complex-to-manage enterprises whose balance sheets and trading books were but wishful guesses. Moreover, turning a blind eye to reckless bets wasn't a bad policy for executives with limited personal downside (Bhidé 2008).

American industry—businesses in the real U.S. economy—had long ago learned hard lessons in the virtues of focus. In the 1960s, the prevailing wisdom had favored growth through diversification. Many benefits were cited. Besides synergistic cost reductions offered by sharing resources in functions such as manufacturing and marketing, executives of large diversified corporations allegedly could allocate capital more wisely than could external markets. In fact, the synergies often turned out to be illusory and corporate executives out of touch. (Super-allocators like Jack Welch and Warren Buffett were exceptions.) The weaknesses of diversification were sharply exposed by the recession of the early 1980s and by Japanese competition. Later in the decade, raiders used junk bonds to acquire conglomerates at deservedly depressed prices and sold off their components at a handsome profit.

Banks missed the 1960s conglomeration party. Prohibitions on interstate banking and the separation between investment and commercial banking severely limited diversification in the financial industry. But as the rules were dismantled, financial institutions plunged right in.

The early results weren't promising. Efforts to sell stocks and socks at Sears went nowhere, as did the Prudential Insurance Company's foray into the brokerage business and Morgan Stanley's venture into credit cards. But the forces that had curbed diversification in the industrial

sector did not restrain financial institutions. Low-cost Japanese competitors did not show up inefficiencies; and in many financial businesses, the driver of long-run profits lies in the prudent management of risks and returns, not in cost control. Raiders couldn't use junk bonds to dismantle conglomerates: Financial institutions are too highly levered for regulators to allow them to be taken over with borrowed money, and compensation arrangements made conglomeration irresistible anyway. Many financial firms pay out nearly half their gross profits as bonuses—even if these profits are secured by loading up on risk. Bonuses paid are paid forever, even if the bets ultimately go bad. Conglomeration offered CEOs the opportunity to take ever larger bets—and to earn staggering personal returns without much personal risk.

Bank regulators were more concerned than bank executives about the growing risks. But they apparently succumbed to the idea, peddled by financiers and modern finance theorists, that if a little financial innovation was good, a lot must be great. Instead of curbing the issuance of ABSs or the growth of derivatives that were far outside their capacity to monitor, regulators tried to adapt: They required banks to hold more capital for riskier assets and to disclose what proportion of their trading positions could not be marked to market. The Federal Reserve pressed dealers to improve the processing of trades in over-the-counter derivatives. Unsurprisingly, given the asymmetry of resources and incentives, these measures proved inadequate: the regulators could not keep up.

Former President Clinton, whose administration midwived the first large-scale production of financial toxins, blames the current crisis primarily on the absence of good investment opportunities besides housing in the Bush administration. Others have indicted the Federal Reserve's monetary policy, the rating agencies, and even the S.E.C. for abolishing the uptick rule, which discouraged short selling. But the analysis I have outlined above suggests that elected officials and appointees from both political parties—and respected economists—had so undermined the banking system that anything could have triggered a collapse.⁹

The Revolution Reconsidered

According to the prevailing wisdom, the crisis was the result of a regulatory apparatus that had fallen behind the development of modern financial theory and practice. There were too many *gaps* in the regulation, and

these need to be filled. But there is little recognition of the role that regulation actually played in fostering the crisis. Thanks to the regulations, the wizards of Wall Street can lever up their balance sheets—and their bonuses—to levels far beyond what private lenders would tolerate. Without F.D.I.C. insurance, for example, banks that engaged in highly levered speculation—or that extended credit to investment banks and hedge funds that engaged in such speculation—would have faced great difficulty in attracting the deposits they needed.

The conventional wisdom is also defensive: It holds that by filling the right regulatory gaps, the financial status quo can be saved from its excesses. But is the new financial technology really worth saving? How does the securitization of the credit that was previously extended by banks, and how do the derivative instruments and the trading based on this securitized debt, contribute to economic prosperity?

In 1987 Lowell Bryan, a McKinsey & Company director, wrote that “a new technology for lending—securitized credit—has suddenly appeared on the scene. This new technology has the capacity to transform the fundamentals of banking, which have been essentially unchanged since their origins in medieval Europe.” Bryan predicted that traditional lending might soon become obsolete: “About half of all debt in the national economy is raised through securities; that number might increase to 80 percent in the next decade.” The new technology, he argued, offered more checks and balances than traditional banking:

Under a securitized credit system, in which an outside agency assigns a rating to the issue, credit risk will likely be properly underwritten before investors will buy an issue. In many cases, another third-party credit underwriter (a bank, a finance company, or an insurance company) must guarantee a portion of the credit risk in the issue. So at least one and often two skeptical outside parties review the credit underwriting before the issue can be placed with investors.

In contrast, he suggested, “loan risks depend entirely on self-definition by the institution making the loan.” Similarly, the rates of securities were set by an objective market, not by the subjective judgments of bankers. And securitized debt was “attractive to individuals, pension funds, and other investors who either can’t or won’t assess credit risk and would rather let rating agencies do the job.”

In a now celebrated paper given at the annual Jackson Hole conclave of central bankers in 2005, Raghuram Rajan warned that in reality,

financial innovation had made the economy riskier. But his critique was aimed mainly at the perverse incentives of financiers, and did not question the value of the new financial technology that Bryan had celebrated. In fact, according to Rajan (2006, 321), financial innovations had produced “beneficial, real effects, increasing lending, entrepreneurship, and growth rates of GDP, while reducing costs of financial transactions.” For the new technologies had made “hard” information on firms and individuals from “centralized sources” such as Dun and Bradstreet widely available, allowing loan officers to cut down on regular visits to borrowers. Some “soft information that is hard to collect and communicate,” such as judgments of character, was certainly lost when regular visits were ended (*ibid.*, 319–20). But the increased availability of hard information more than compensated for the loss of soft information. Moreover, unlike soft information, hard information (for instance, credit histories and accounting data) could be automatically processed, further reducing costs and raising the productivity of lending.

The productivity-enhancing technologies also changed the nature of borrower-creditor relationships: Many transactions had moved from being “embedded in a long-term relationship between a client and a financial institution to being conducted at arm’s length in a market” (Rajan 2006, 321).¹⁰ To be sure, there was a tradeoff: Long-term relationships produced “greater trust and understanding.” But they also constrained each party’s choices. Thanks to technological changes (and their knock-on effects on regulatory and institutional arrangements), the tradeoff favored long-term relationships mainly for “the most complicated, innovative or risky financial transactions” (*ibid.*, 321).

This paper suggests a different set of inferences.

The claim that the automated processing of hard information provided by a centralized source is usually a superior substitute for the subjective judgments of a banker—F. A. Hayek’s “man on the spot”—ignores the unquantifiable uncertainty that is an important feature even of seemingly routine lending decisions. Using a credit score produced by feeding a few items of hard data into a mathematical model to assess the likelihood of default assumes that all risks are quantifiable. And that’s just one of the many assumptions at work. For instance, credit-scoring formulae also assume that the probability that all loans of a certain kind will default derives from exactly the same risk factors; that these risk factors are all combined or “weighted” in exactly the same way; and that somehow an omniscient modeler knows the right weighting scheme.

Such assumptions would be risible in other walks of life: Replacing “routine” felony trials with a scoring model is inconceivable, whatever the cost savings might be. Nor do economics departments economize on the costs of hiring even entry-level faculty or Ph.D. students by using predictive quantitative models (save in countries like France where faculty are hired on the basis of objective scores in a competitive national exam).

Like criminal trials and faculty hiring decisions, the traditional lending process implicitly took into account unquantifiable uncertainties and the uniqueness of individual circumstances. The difference between the information produced by a loan officer’s visits and that offered by Dun and Bradstreet is more than just a matter of soft rather than hard. Visits produce information that is wider in its range (and can cover private information that is not available to Dun and Bradstreet) and better tuned to the specific circumstances of the borrower. For instance, a commercial loan officer may take note of changes in the number of cars in the visitors’ lot of an industrial distributor, but ignore such changes for an Internet retailer. Similarly, loan officers and committees traditionally used a wide range of information (including both quantitative data on past and projected financial performance and qualitative observations about competitors and customers) to construct a coherent “case” or “narrative” rather than plug data into a formula. This may have amounted to overkill in certain kinds of lending: mortgages with high down payments in stable housing markets, for instance. But it is hard to imagine that mechanistic lending is an appropriate rule for most credit decisions, and that case-by-case ought to be reserved just for unusual situations.

Similarly, embedding financial transactions in long-term relationships instead of conducting them at arm’s length in an “objective” marketplace has merit in many seemingly mundane contexts, and not just for “the most complicated, innovative or risky financial transactions.” Banks whose lending far exceeded their base of long-term depositors have discovered that it is dangerous to rely on funding by fickle strangers in wholesale money markets. Similarly with the extension of credit: A financial institution that underwrites securitized credit for resale becomes, to a significant degree, a sales agent for the borrower. Of course, sensible sales agents who value their relationships with customers will exercise some care in what they sell; nonetheless, the degree of care is diluted by the expectation that customers will do their own analysis, and by the absence of any direct financial risk to the sales agent. Thus, an

underwriter of debt cannot be expected to exercise the prudence of a banker making a loan that will remain on the bank's balance sheet.

Long-term relationships between lenders and borrowers have great value even after credit has been extended, akin to the benefits of shareholder-manager relationships. Borrowers can share private information with lenders just as corporate "insiders" could (if not barred by law), and thus have a greater opportunity to send early warnings of danger. In addition to self-interested restraints on opportunistic behavior, because the parties know they are stuck with each other—a banker cannot dump a thirty-year loan as easily as a mutual fund can sell a bond—there may develop an additional sense of mutual solidarity. A banker may thus renew a line of credit in hard times where an arm's-length purchaser would not roll over the same issuer's maturing commercial paper. Renegotiating the terms of a loan with one banker is easier than corraling many dispersed bondholders to discuss the modification of bond covenants. One of the consequences of the slicing and dicing of mortgage loans is that it is now often practically impossible for homeowners in default to work things out with their lenders, as they might if their mortgage had a single owner, especially one located at the nearby branch of their bank.

Why was there such a mass displacement of long-term, relationship- and judgment-based lending by arms-length securitization? In the narrative offered by Rajan and several other economists, exogenous technologies played a deterministic role, inexorably forcing changes in regulation and financing arrangements. But technology might, instead, have facilitated relationship banking. For instance, collaborative software (such as Lotus notes) could have improved the capacity of large lending teams serving far-flung borrowers to share a wide range of data, observations, and judgments. The outcome was not predetermined. In fact, in the story that I have told here, the increased share of securitized financial assets was driven mainly by the beliefs of financial economists and regulators.

Economics has underpinned securitization through its embrace of mathematical models to the exclusion of other perspectives, and through a complementary tendency to ignore the downside of liquidity and arms-length relationships. Regulation has brought this way of thinking into the world of practice in two paradoxically related streams: the increasing scope and effectiveness of the New Deal securities acts and subsequent rules that fostered the growth of arms-length transactions in corporate control; and the progressive dilution of New Deal banking acts, which nurtured and protected long-term relationships. This is the complicated

story that may explain why developments in mortgage banking, of all things—traditionally the plodding, conservative bread-and-butter of depository banking—should have led to the implosion of the world economy.

NOTES

1. Kay 2009 and personal communication.
2. Indeed the assumption is so farfetched that its existence is virtually never acknowledged when MBAs are taught CAPM. Yet many empirical tests of market “efficiency” rely on CAPM; a circularity which suggests that many researchers are unaware that their research tool presupposes the absence of the phenomena they are testing for.
3. I critiqued the Samuelson prescription in the same journal twenty years later (Bhidé 1994b).
4. *The Economist*, 19 May 1990: 91.
5. These were the Depository Institutions Deregulation and Monetary Control Act of 1980 (DIDMCA); the Garn–St Germain Depository Institutions Act of 1982 (Garn–St Germain); the Competitive Equality Banking Act of 1987 (CEBA); the Financial Institutions Reform, Recovery, and Enforcement Act of 1989 (FIRREA); and the Federal Deposit Insurance Corporation Improvement Act of 1991 (FDICIA). Source: F.D.I.C. 1997.
6. Importantly, passage of the Commodity Futures Modernization Act of 2000 specifically barred the C.F.T.C. from regulating credit-default swaps.
7. <http://www.bloomberg.com/apps/news?pid=newsarchive&sid=aqPEtxa1cSag>
8. As Rajan 2006 emphasized.
9. Very likely, the knock-on effects of the rapid but uneven advances of the Chinese economy provided an important catalyst. After Deng’s reforms (as Edmund Phelps and I wrote in 2005), China’s capacity to produce modern goods increased faster than its capacity to consume them. Nike could make fancy sneakers in China more quickly than it could create and satisfy local demand. Hence a “savings glut.” But if the Chinese saved, someone had to borrow. And the borrowing had to be channeled through a financial system that could screen for creditworthiness and guarantee repayment. The U.S. financial system offered the illusion of such a capacity but in fact, for reasons discussed in the main text, buckled under the amounts that passed through it.
10. Mark Granovetter’s 1985 paper is the seminal work on embedded transactions.

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