Financial Mergers and Their Consequences

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This paper, written for a Columbia Law School - American Bar Association conference, analyzes the massive merger wave that has led to substantially increased concentration of banking activity in the United States. One consequence is the rise of banks "too big to fail." The structural changes have also been associated with a striking increase in financial institutions' share of all U.S. corporate profits along with employee compensation out of line with norms for individuals of comparable ability. Data on concentration in well-defined banking markets are quite scarce, but fragmentary evidence suggests appreciable monopoly pricing power potential in some product markets. Mergers that lead to concentration have for decades been the focus of antitrust activity. But a review of the record shows an emphasis on mergers that raise local banking market concentration and nearly total neglect of other important lines, on which data are lacking. If antitrust actions were to be taken against the concentration of power in those lines, offsetting advantages in the form of realized scale economies would have to be weighed. A review of the most recent evidence suggests that difficult tradeoffs might be confronted.

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The past quarter century has witnessed among other things a radical transformation in the structure of the U.S. banking industry, attributable largely to a wave of mergers, and the most severe, long-lasting recession experienced by the United States since the 1930s. It would be reckless to claim that the two are closely linked causally. The recession that began in late 2007 resulted from a perfect storm combining financial industry innovation, greed, and deception; imprudence on the part of beleaguered consumers; the legacy of prior crises leaving traditional institutions for home financing decimated; a securities rating triopoly whose reward structure favored optimism over truth-telling; abject regulatory failure; a beneficent but misguided Congressional policy fostering more widespread home ownership; and dangerously expansive monetary policy pursued by the U.S. Federal Reserve.

This paper focuses on the changes that emerged in financial industry structure, conceding at the outset that they were only one component of a larger problem. Simple causal chains are even more difficult to establish. The most direct causal link was backward from crisis to government bailout, since the leading banking firms became so large relative to the U.S. financial infrastructure and so systemically interdependent, in part due to cross-trading of risks, that individual actors' imminent failure threatened even more grave macroeconomic repercussions.

Other more subtle links will be suggested, but we begin by examining the structural changes that occurred and then ask how those structural changes may have affected the conduct and performance of banking institutions.

The Merger Waves

During the 1970s and early 1980s, the number of FDIC-insured banks in the United States was roughly stable in the range of 13,500 to 14,500 corporate entities.[1] Bank failures and mergers reduced those numbers to less than half -- i.e., 6,544 -- by the year 2010.[2] Drawing upon Federal Reserve Board data, Stephen Pilloff estimates that between 1990 and 2005, there were nearly 3,800 bank mergers involving $3.6 trillion of assets.[3] Using FDIC data, Figure 1 tracks trends in two kinds of FDIC-insured commercial bank disappearances through merger -- voluntary mergers and mergers orchestrated by federal banking authorities to reallocate (i.e., "resolve") the assets and liabilities of failing institutions. Voluntary disappearances through merger peaked in 1988 and again in the mid-1990s, when the U.S. economy was enjoying strong economic

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1. Federal Deposit Insurance Corporation, Statistics on Banking: 1934-1994 (Washington: 1995); and Historical Statistics on Banking, Table CB02, www2.fdic.gov/hsob/HSOBRpt.asp.

2. The number of specialized savings and loan banks declined from 4,613 in 1975 to 1,305 in 2005.

3. "The Banking Industry," in James Brock, ed., The Structure of American Industry (12th edition: Pearson/Prentice Hall, 2008), p. 269.

growth. Resolution mergers peaked in 1988 following unusually high interest rates and then deregulation, declining to negligible numbers in the 1990s, and then soared following the crash of 2008.

The Largest Companies

These aggregate numbers fail to capture what was happening at the top of the banking industry. That history is encapsulated in Figure 2, tracking mergers effected by or leading to the six largest banking corporations (measured in terms of assets) as of the end of 2008.[4] Altogether, 53 substantial components are found to have come together into the six surviving entities. The 1985 asset ranks of the merging entities are given in parentheses following the company names. Not all of the named survivors were the first movers in mergers that led to substantial consolidation. In four cases marked (circle L), another bank took the lead, choosing after acquisition to adopt a new name derived from its acquisition target, e.g., when Nationsbank was the instigator of a merger with Bank of America in 1998. Legibility limitations allow the chart to track only the most significant mergers. At the end of each surviving institution trajectory is a numeral followed by "SM," for small mergers. The count, based mainly upon published company histories in Moody's (now Mergent's) Bank & Finance Manual, is probably incomplete, but altogether, 139 institutions too small to be encompassed in Figure 2 were tabulated. Or in total, the six largest survivors of 2008, with end-of-2010 assets totalling $9.3 trillion, or 66 percent of U.S. gross domestic product, stemmed in their recent history from 193 merged entities.

Rising Concentration

Merger activity was a primary contributor to rising levels of aggregate concentration in the U.S. banking industry. Figure 3 tracks the share of total U.S. bank-like assets reported by ten of the largest U.S. banks, commercial and investment, by year between 1985 and 2010.[5] Between 1985 and 2010, the share of assets commanded by the top ten increased by 2.5 to 2.9 times, depending upon difficult inclusion and exclusion choices, to somewhere between 46 and 53 percent in 2010. Insurance companies were systematically excluded. In all years, Fannie Mae and Freddie Mac were excluded from the sample because of their unique relationship to the public purse, confirmed when both were explicitly nationalized at great cost in 2008. Their inclusion would have imparted an even steeper upward trend to the concentration data.

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4. The chart originally appeared in F. M. Scherer, "A Perplexed Economist Confronts Too Big To Fail," European Journal of Comparative Economics (web http://eaces.liuc.it), vol. 7, no. 2 (2010), pp. 267-284.

5. The trajectory shown is quite similar to one presented by Henry Kaufman in The Road to Financial Reformation (Wiley: 2009), p. 100. Kaufman tracks the share of "U.S. financial assets" held by the largest ten "financial institutions" between 1945 and 2003. Unfortunately, he does not disclose exactly the universes and sub-universes covered or explain how he maintained continuity despite inconsistent sources. His chart shows the top ten controlling 20 percent of universe assets in 1945, with a decline to 10 percent in 1990 and then a sharp increase to 48 percent in 2003.

Morgan Stanley and Goldman Sachs were excluded from the primary data source, The Banker magazine, until they were transformed from publicly traded investment banks (emerging from partnerships in 1986 and 1999 respectively) to bank holding company status in 2008.[6] The solid line in Figure 3 includes Goldman and Morgan Stanley only for 2008-2010, overestimating the increase in the largest institutions' combined asset share. The dotted line excludes the two for 2008 through 2010, replacing them with the next-ranked banks, causing a temporary indicated concentration decline for the crisis years 2008 and 2009. Had Goldman and Morgan Stanley been included in all years, the trend line to the left of 2008 would have been elevated and its rate of growth would probably have been increased.[7]

Further perspective is provided by Figure 4, which arrays the ten banks included in the more generous asset share tabulation plus two replacements in descending order of 2010 assets. The distribution, called "skew" by economists, is typical of the firm size distributions observed in most modern industries. A few firms tower over the rest.

Difficult sample selection questions also had to be resolved in choosing the denominator for the Figure 3 share calculations, i.e., the assets of bank-like institutions. The time series used, derived from Federal Reserve Board flow of funds accounts, includes commercial banking, savings and loan associations, mutual savings banks, credit unions, and money market funds. One could argue over the inclusion or exclusion of other institutions providing financial services. To put the argument in perspective, Table 1 lists all the private sector financial components covered by the Federal Reserve board accounts. Altogether, the assets of bank-like institutions included in the denominator universe for Figure 3 amount to roughly 41 percent of the assets of both included and excluded financial institution counterparts.

Profit Shares and Their Implications

The rising trend in the concentration of banking institution assets is provokingly similar to another rising trend: in the share of total U.S. corporate profits attributable to financial institutions (including insurance companies), presumably driven mainly by the performance of banking corporations. Figure 4 arrays the relevant statistics from 1960 through part of 2011.[8] In the numerator of the share calculation are the reported pre-tax profits of all private financial corporations (excluding those of Federal Reserve banks), but including companies operating in most of the fields spanned by Table 1. The denominator is the equivalent profit sum for all U.S. domestic corporations, including profits realized by the Federal Reserve banks. After fluctuating fairly narrowly between 7 and 18 percent, the financial corporation share began rising,

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6. The principal reason was to gain entitlement to FDIC assistance.

7. Ally Bank, derived from the government-financed breakup of General Motors in December 2008, had assets barely sufficient for sample inclusion in the final years.

8. The source is Economic Report of the President, various years. For the most recent years, the source table number in the 2012 report is B-91.

reaching a peak of 40 to 42 percent in 2002 and 2003.[9] The crisis of 2008 induced a steep decline to 10 percent, but recovery to the 30 percent level was rapid. By way of comparison, the finance and insurance sectors, nearly equivalently defined, originated 7.6 percent of gross domestic product in 2000 and 8.4 percent in 2010.[10] Thus, there is a vast disproportion between the value added share of financial corporations in the economy and their equivalent share of profits.[11]

If anything, this picture understates the profitability of financial institutions. Wall Street financial institutions are said to apply a rule of thumb. As the end of a fiscal year approaches, they estimate their gross profits before taxes and reallocate part as bonuses to achieve total staff compensation amounting to 50 percent of the profit pool.[12] Consider the implications. Assume that the after-bonus (i.e., reported) profits of all financial corporations are 100. Of these, we assume 30 percent to reside in banks conforming to the 50 percent rule. If the pay of those 30 percent were not topped up from profits, the banks' profits would have been higher -- in an extreme and limiting case, 1/.5 = 2 times higher, or 60, rather than 30. Thus, the total financial profit pool would have been elevated to 100 + 30 = 130. To calculate financial institutions' share of all profits, the total for all corporations must also be increased by 30, so if the post-topup share of financial corporations' profits were 40 percent, as in 2003, implying total corporate (financial and nonfinancial) profits of 100/.40 = 250, the non-bonus share of financial corporations would be 130/250 = 52 percent, not 40 percent.

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9. The dotted line shows the profit share reported by an earlier Economic Report of the President and then amended in the 2012 report.

10. Statistical Abstract of the United States: 2012, Table 670.

11. Curiously, returns on bank equity in the same period, omitting the 2008 crisis, ranged between 8 and 15 percent -- far from exorbitant levels. See "The Not-for-Profit Sector," The Economist, May 5, 2012, p. 69, verified using medians from annual Fortune 500 industry tabulations. Apparently, finance became more equity-intensive as profits ballooned. The explanation does not appear to lie in greatly increased economy-wide capital intensity. Bank credit outstanding, including both business and consumer finance, was approximately 46 percent of gross domestic product in 1985 and 58 percent in 2004. Between 1960 and 2010, there was no significant time trend in nonresidential capital investment as a percentage of GDP. The rationale probably involves more complex approaches to financing. One indicator is that returns on equity in the middle 1980s were actually higher on average than in 2010-11 and only a percentage point lower than in 2003-2005, even though the finance sector profit share was much lower in the 1980s.

12. See e.g. "The Big Financial Pay Pie," Fortune, December 7, 2009, p. 24; and "Parsimony, for Goldman," New York Times, July 21, 2010, p. B2.

Implicit in this calculation is the assumption that all compensation is in the form of bonuses that are an economic rent with little or no direct impact on the quantity of relevant financial services supplied.[13] This is of course not true; substantial compensation is required to induce the services of the banks' staffs. But that it borders on an important truth is suggested by the results of research by Claudia Goldin and Lawrence Katz.[14] They tapped the comprehensive alumni records of Harvard College and sent survey questionnaires to the members of three undergraduate cohorts -- those graduating in 1980, 1990, and 2000. A substantial response of 6,554 alumni was received. The responses included data on graduate degrees received after Harvard College, earnings in the year 2005, occupation, and time intervals spent without employment. These were linked inter alia to data on SAT scores and college grade point averages, controlling within an already select sample for demonstrated academic ability. When all of the control variables were included in multiple regressions, the authors found for example that alumni with law or medical degrees achieved earnings premia relative to their peers of 46 percent.[15] Holding other variables equal, those who were employed in the financial industries received earnings premia of 195 percent, or nearly three times those of their peers. Since many controls for ability, even if not work effort, were included in the analysis, these premia must almost surely be viewed as an approximation to economic rents. To the extent that two-thirds of financial employees' earnings were more in the nature of rents, the calculation in the last two sentences of the previous paragraph, the rent component would have been on the order of 20 points, total pay in financial entities would be 120 rather than 130, total universe pay 240 rather than 250, and the true profit share of financial corporations 48 percent.

It is not quite true, however, that the extraordinarily generous compensation paid by many financial institutions is rent in the strict economic sense of the word, with no significant resource allocation implications. High Wall Street compensation does affect resource allocation. It biases the career choices of the best students toward finance and away from other productive careers they might otherwise have chosen. Goldin and Katz report that the fraction of Harvard College graduates working in finance rose from 5 percent for the first cohort to 15 percent for the latest cohort. The finance percentage rose to 28 percent in 2008 and then declined (with fewer job openings) to 17 percent in 2011.[16] Colleagues from the Physics Department at Harvard have bemoaned the

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13. See The New Palgrave Dictionary of Economics (Macmillan: 1987), vol. 4, p. 141.

14. Claudia Goldin and Lawrence Katz, "Transitions: Career and Family Life Cycles of the Educational Elite," American Economic Review, May 2008, pp. 363-369.

15. Those with Ph.D.s earned 20 percent less on average!

16. See e.g. Benjamin Friedman, "Is Our Financial System Serving Us Well?" Daedalus, Fall 2010, p. 15, who asks "whether in the aggregate the direction of such a large fraction of our most skilled, best-educated, and most highly motivated young citizens to the financial sector constitutes the best used of what is surely one of our nation's most valuable resources." Thhe data for 2008 and 2011 came from the web site of the Harvard University Office of

tendency for many students in their field to become Wall Street "quants" rather than choosing to work in science and technology -- specialties where, it is said, the United States has experienced significant new domestic talent shortfalls, compensated to an unknown extent by the inflow of science and engineering graduates and especially students from abroad.[17] If it falls behind in achieving innovative real sector advances by stressing financial sector talent and the innovations that presumably follow from it, the United States could suffer significantly. But on this, as on many other aspects of financial innovation, reasonable observers may disagree.

Implications of Size and Concentration

Two questions remain: (1) what are the consequences of enhanced bank size and concentration for various aspects of industry performance; and (2) what policy measures are implied from these consequences? We begin with the former.

One obvious implication has been stated already: As banking institutions become larger and engage with a wider range of other financial entities, systemic risk -- i.e., the probability that adverse economic events will set off a domino chain of reactions with dire consequences for the entire economy -- rises at least apace. Individual institutions become "too big to fail," requiring financial help from national treasuries and central banks inconsistent with the logic of free markets. The furor that accompanied the U.S. government's TARP (Troubled Asset Relief Program) in 2008 and 2009 hardly needs retelling. I happen to agree that temporary relief was warranted by the circumstances, but I concur too that it creates significant moral hazard dangers, leading banks to be less cautious about the investments they commit and hence aggravating the risk of future crises. By reducing the risk of the largest institutions while leaving smaller rivals unprotected, it also reduces differentially, perhaps significantly, the cost of borrowing for too-big banks.[18] This cost advantage in turn could reinforce the tendency toward concentration of banking assets in the largest enterprises.

A second implication comes from the power of money to influence governmental processes, especially since the Citizens United decision of January 2010.[19] Even before Citizens United, the finance lobby is said to have contributed $475 million to political

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Career Services.

17. See William Zumeta and Joyce Raveling, "Attracting the Best and Brightest," Issues in Science & Technology, Winter 2002-03, pp. 36-40; Vivek Wadhwa, "A Reverse Brain Drain," Issues in Science & Technology, Spring 2009, pp. 45-52; and Robert D. Atkinson,"Why the Current Education Reform Strategy Won't Work," Issues in Science & Technology, Spring 2012, pp. 29-36.

18. See the statistical analysis by James Kwak, "Who Is Too Big To Fail?," paper prepared for a Fordham University conference in March 2010, who finds a "too big" advantage for banks with assets exceeding $100 billion of roughly 50 basis points after controlling for other measures of risk.

19. Citizens United v. Federal Election Commission, 130 S.Ct. 876 (January 2010).

candidates in 2008 -- more than twice the level of contributions from the second-largest lobby, the health care industry.[20] This concentration of the power to support legislators financially and presumably to influence their decisions is wholly at odds with American traditions, seen inter alia in James Madison's Federalist papers, especially Number 10; the history of Andrew Jackson's opposition to the first National Bank;[21] and the revolt against politically powerful Big Business underlying the antitrust movement of the late 19th and early 20th centuries.[22]

Third, and central to the theme of the present conference, is the possibility that the increasing prominence of the largest financial institutions is accompanied by economic power exercised to achieve elevated prices and profits. This is a central theme of the subfield of economics known as "industrial organization," one of my principal specialties. Like almost every other domain in economics, it is not without controversy, both theoretical and empirical. That something is askance is suggested by the disproportionate profit share and employee rents realized by financial industries during the past two decades. One is tempted to embrace the syllogism: Rising concentration, rising profitability, therefore evidence of monopoly power.

This would be too simple, however. I see no way of denying the evidence of supra-normal profitability in Figure 4. The problem lies in Figure 3. The rising concentration shown there is best called "aggregate concentration," that is, the share of assets or some other variable controlled in an economic sector by some small number -- e.g., ten -- of leading enterprises. But as the distinguished M.I.T. economist Morris Adelman warned long ago, "Absolute size is absolutely irrelevant."[23] Rather, industrial organization theory and statistical evidence teach that market concentration -- that is, a high market share collectively held by the largest few sellers in a well-defined and meaningful economic market -- is conducive to either monopoly pricing or cooperative oligopoly pricing, yielding elevated prices and supra-normal profits (i.e., economic rents). The universe whose share the ten leading banking firms Figure 3 traces comprises all kinds of banking activity in the United States, ranging from taking consumer checking and time deposits to granting diverse loans at interest to helping

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20. Kevin Drum, "Capital City," Mother Jones, January/February 2010, p. 42.

21. Earl Kintner and Hugh C. Hansen quote President Jackson's statement that "It is easy to conceive that great evils to our country and its institutions might flow from such a concentration of power in the hands of a few men." "A Review of the Law of Bank Mergers," Boston College Industrial and Commercial Law Review, vol. 14 (December 1972) at p. 214. Jackson's visage adorns U.S. 20-dollar bills.

22. For my own analyses, see "Efficiency, Fairness, and the Early Contributions of Economists to the Antitrust Debate," 29 Washburn Law Journal 243-255 (1990); and Part I of Competition Policy, Domestic and International (Edward Elgar: 2000).

23. Testimony before the Subcommittee on Antitrust and Monopoly, Senate Committee on the Judiciary, hearings, Economic Concentration (Part I: 1964).

companies float securities and much else. The ten included banking institutions are all U.S.-based private corporations, excluding foreign-owned banks, partnerships (of which only a few significant examples survive), and public enterprises such as Fannie Mae. The markets in which they compete are implicitly nationwide. Thus, Figure 3 arguably does not deal with meaningfully defined economic markets, and it would be wrong to apply to them the standard structure - conduct - performance paradigm of industrial organization theory.

There is another obvious problem. Even assuming that the sectors tabulated in Table 1 together comprise a meaningful market, the share of the top ten enterprises reaches at most 53 percent -- well short of the tight oligopoly threshold. And most industrial organization scholars believe that markets must be more highly concentrated -- e.g., with the four leading participants commanding 40 to 60 percent of sales or assets -- to comprise an oligopoly capable of yielding cooperative pricing and hence elevated profits.

Yet the abnormally high profits and rents are there for all to see. There must be an economic cause, not yet identified. Indeed, there are, we shall see, more than one plausible causes. What remains is to nail them down.

A beginning insight is that much commercial banking -- notably, the issuance of loans to all but large business firms and the provision of checking account services -- is in the present state of technology (ignoring potential internet-based developments such as "crowd-funding") preponderantly local.[24] This is recognized inter alia by the Federal Reserve Board and the antitrust agencies, and as a result, they have cooperatively compiled statistics on the concentration of bank deposits in localized markets -- metropolitan statistical areas for urban banking, and counties for rural banking -- throughout the United States. The average three-firm concentration ratio in 2006 was 61.2 percent for urban areas and 85.5 percent for rural counties.[25] On average, one could generalize that the typical urban banking market is a loose oligopoly and the average rural banking market a fairly tight oligopoly. Given such market structures, cooperative pricing of time deposit interest rates and loan rates falls into the realm of possibility. There is of course considerable variation around these mean concentration values, facilitating statistical analysis of how differences affect pricing. The results are complex and not always uniform. But the central thrust is that depositors receive lower interest rates, and borrowers pay higher loan rates in the most concentrated local markets, other variables held equal.[26] Thus, high-side values of local

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24. For a skeptical view, see "Will Crowdfunding Beget Crowdfrauding?" Bloomberg Businessweek, May 6, 2012, p. 51. On the early success of one crowdfunding internet site, see "Start-Ups Look to the Crowd," New York Times, April 30, 2012, p. B1.

25. Pilloff, supra note 3 at p. 277.

26. See e.g. Pilloff, supra note 3; Allen Berger and Timothy Hannan, "The Price-Concentration Relationship in Banking," Review of Economics and Statistics (vol. 71, May 1989), pp. 291-299); Robin Prager and Timothy Hannan, "Do Substantial Horizontal Mergers Generate Significant Price Effects?," Journal of Industrial Economics, vol. 46 (December 1998), pp. 433-451); Timothy Hannan,

market concentration may help explain pockets of superior profitability in banking.

This is well recognized and accepted by the relevant federal and state authorities, and as a result, there have been active efforts to restrain the growth of local market concentration in banking through antitrust actions blocking the most concentration-increasing mergers. On this, more subsequently. As a probable result, average local market three-firm concentration ratios have actually tended to decline by 5 to 6 percentage points between 1990 and 2006 even while aggregate banking concentration was rising briskly.[27]

It is probable, however, that we have explained only a part, and perhaps a small part, of the profit puzzle. Larger borrowers are apt to be less confined to local markets and more apt to do business with the largest banking institutions. And banking involves much more than simply taking in deposits and lending out depositors' money. Here, alas, we confront a vast statistical void. The relevant statistics, requiring inter alia rigorous market definition as well as the ability to enforce survey compliance, simply do not exist, at least for someone outside the system like the author.

The only estimates known to me on concentration in more specialized banking markets have been published by the Clearing House Association, a consortium owned by 17 large U.S. and foreign banks. The results are summarized in Table 2. Both numerator and denominator appear to exclude the activities of foreign banks operating in the United States. Many of the definitions, e.g., on exactly how activity has been measured, are unclear. What is clear, however, is that the largest banks -- preponderantly, those covered by Figure 4 -- have relatively minor combined nationwide positions in such activities as retail (i.e., consumer-oriented) deposit holding and small business loans. On the other hand, the markets for services such as floating debt and equity issues,[28] organizing loan syndicates, operating credit card networks, handling (often bundling) mortgage-based securities, and merger and acquisition support are highly concentrated -- enough so that one would expect oligopolistic pricing behavior to emerge.

The Clearing House market share estimates are sparsely explained and documented, and one might from other evidence question their accuracy. Most notably, the New York Times publishes quarterly estimates of deal value and market

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"The Functional Relationship Between Prices and Market Concentration, in David Audretsch and John J. Siegfried, eds., Empirical Studies in Industrial Organization (Kluwer: 1992), pp. 35-59; Timothy Hannan, "Bank Commercial Loan Markets and the Role of Market Structure," Journal of Banking and Finance (vol. 15, 1991), pp. 133-149; and Isil Erel, "The Effect of Bank Mergers on Loan Prices: Evidence from the U.S.," working paper, Ohio State University (August 2006).

27. Pilloff, supra note 3 at p. 277.

28. A study at Oxford University found "no good reason" why fees charged for initial public offerings in the United States remain at 7 percent when they approximate 4 percent in Europe. "High-speed Slide," The Economist, November 14, 2009, p. 86.

shares of the leading financial institutions, domestic and foreign, in providing advice (and presumably helping issue new securities if needed) when nonfinancial companies execute mergers and acquisitions.[29] If one merely adds up the stated deal volume shares for the top five financial advisers, one finds a sum of 93.5 percent -- not far from the 100 percent share suggested in the Clearing House report for the top six banks. But from the New York Times listing, one sees additional shares for nine more banks, with the shares for all 15 listed banks totalling 179 percent. The explanation is provided by The Times: "Multiple firms are usually involved in each transaction." If one divides the share of the five leaders by the sum of all listed banks' shares, one arrives at an estimate for the five leaders of 52 percent -- a huge disparity from the Clearing House report estimate.

Nevertheless, two additional inferences are warranted. First, the business of advising on the financial aspects of mergers is oligopolistic, even if only loosely so. But second, diverse banks are cooperating to provide the desired advice; they are presumably working together rather than at arms length. And when they cooperate in an important and profitable activity such as merger advice, one might expect them to develop cooperative attitudes toward the pricing of their services -- an essential ingredient for solving the oligopoly pricing problem in a manner that yields supra-normal profits.[30] In this may lie at least part of the secret of the extraordinary profits and rents realized by financial industry actors.

Another facet of the Clearing House estimates demands comment. The report is unclear on what is meant by the "trading of ordinary securities," for which a market share of 100 percent is given for the top six banks. It may refer to so-called "dark pool" trading, said to have risen to 14 percent of all U.S. stock trades. The advantage banks have as the focus of such trading is slightly higher computer-based speed, lending itself to high-frequency trading, but with palpably less transparency than standard exchanges such as the New York Stock Exchange and NAFTA.[31] Needless to say, ordinary investors are unable to participate in such markets, which among other things are essentially unregulated. Alternatively, it might cover trading securities for the bank's own account (i.e., "proprietary trading"), which has been said by many observers to be a major and sometimes the preponderant contributor to leading banks' profits (to be limited in yet-unknown ways by the application of Dodd-Frank-Volcker law rules).[32] But here we find a variant on the cooperation theme. To make consistent

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29. The estimates for 2011 appear under "On Wall Street, Deal Makers Have a Renewed Optimism for the New Year," New York Times, January 3, 2012.

30. See F. M. Scherer and David Ross, Industrial Market Structure and Economic Performance (3rd ed., Houghton-Mifflin: 1990), especially Chapter 6. In game theory, strategies that yield maximum profits are called cooperative strategies.

31. See "Where Has All the Trading Gone?" Bloomberg Businessweek, May 14, 2012, pp. 49-59. Credit Suisse and Goldman Sachs are said to be the largest dark pool providers.

32. See e.g. John Cassidy, "What Good Is Wall Street?" The New Yorker, November 29, 2010, p. 55; "As Goldman Thrives, Some Say

profits in securities trading, having superior information is crucial. Given the wide range of financing activities in which they participate and the large staffs they employ among other things to keep minute-by-minute track of what is happening on the industrial scene, the largest banks arguably do have superior information. Part of their trading advantage may come innocently from devoting more resources to the information compilation problem. As a Lazard Freres official observed about her work for various foreign clients, "This department has become very important for Lazard.... It gives us unparalleled insight into the European debt crisis, and all the other departments benefit."[33] Nevertheless, despite the purported existence of "Chinese walls" and similar internal information-transmission rules, the major banks presumably derive a trading advantage from internal knowledge of forthcoming events that will drive stock market prices. This is presumably illegal, but one can hardly deny that it exists.[34] On this, which may be of key importance, our ignorance is vast.

The market share - oligopoly insights provided by the Clearing House study have been supplemented by information extracted unsystematically from the trade literature by the author. As noted earlier, Standard & Poor's, Moody's, and Fitch dominate the business of rating securities.[35] Five U.S. banking firms are said to write 97 percent of credit default swaps.[36] Nine Wall Street firms enjoyed exclusive membership in a committee overseeing trading in derivatives.[37] Roughly consistent with the Clearinghouse estimate, the four largest U.S. banks are reported to issue two-thirds of all credit cards.[38] Four institutions account for roughly two-thirds of mutual fund holdings.[39] Four firms originated nearly half of corporate debt issues in the United

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an Ethos Fades," New York Times, December 16, 2009, p. A1; and "Bombmakers Bombarded," The Economist, July 17, 2010, p. 78.

33. "The Greeks' Financial Goddess," Bloomberg Businessweek, April 29, 2012, p. 44. See also "Two Ways for Banks To Win," New York Times, December 20, 2011, Business Day section.

34. See e.g. "U.S. Inquiry of Insiders at Goldman Broadens," New York Times, April 27, 2012, p. B1; "Two Ways for Banks To Win," New York Times, December 20, 2011, p. 4 of business section; and "After Quiet Years, British Regulator Gets Tough on Abuses," New York Times, April 27, 2012, p. B5.

35. There is a fourth U.S. fringe firm, Egan-Jones. In 2012, the German government was seeking to establish a fourth competitor.

36. "Projecting the Impacts of Default on U.S. Banks," Bloomberg Businessweek, November 13, 2011, p. 44.

37. "A Secretive Banking Elite Rules Derivatives Trading," New York Times, Dec. 12, 2010, p. 1.

38. "The End of Wall Street," Bloomberg Businessweek, April 19, 2010, p. 42.

39. "A Look at JPMorgan Chase's Lineup," Bloomberg Businessweek, March 25, 2012, p. 60.

States.[40] After a contemplated merger, the largest agent would handle 70 percent of American corporate stock transfers.[41] Clearly, pockets of tight oligopoly exist in the parts of the banking industry served preponderantly by the largest entities. But systematic information on specialized financial services market structures is at best sparse. We remain mired in an information void like the one that existed at the start of the 20th Century. As Theodore Roosevelt, who took steps to fill the void, observed in his first message as President to the U.S. Congress, "The first requisite [for combatting the trust problem] is knowledge, full and complete -- knowledge which may be made public to the world."[42]

Banking Mergers and Antitrust

To be sure, the problem of concentration in banking markets has not been ignored in U.S. policy. Laws have been passed to control mergers at both the economy-wide level -- notably, the Celler-Kefauver Act of 1950 -- and specifically in the banking industry.[43] There were ambiguities in Celler-Kefauver that made it unclear whether bank mergers would be included under the jurisdiction of the federal antitrust agencies. Both clarification and confusion emerged with the Bank Merger Act of 1960[44] and the Bank Merger Act of 1966.[45] Definitive interpretations evolved only with decisions by the Supreme Court, to which I turn momentarily. Adding confusion were changing views over the legality of combining commercial banking -- e.g., taking deposits and making loans to individuals and companies -- with investment banking, and the appropriateness of branching by banks both within states (governed largely by state laws) and across state borders. The Glass-Steagall Act of 1933 created strong prohibitions against combining under a single institutional roof both commercial banking and investment banking. Its reach was limited by Bank Holding Company Act amendments in 1970,[46] which gave the Federal Reserve Board authority to approve the merging of functions "so closely related to banking or managing or controlling banks as to be a proper incident

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40. "Foreign Banks See Opportunity in U.S. Financial Turmoil," New York Times, June 17, 2009, p. B8. Included in the tally were U.S. corporate debt issues managed by foreign banks.

41. E-mail broadcast from the American Antitrust Institute, August 30, 2011.

42. Addresses and Presidential Messages of Theodore Roosevelt, 1902-1904, at pp. 294-296.

43. For excellent reviews of bank merger legislation and court interpretations thereof, see Kintner and Hansen, supra note 21; and Terry Calvani and W. Todd Miller, "Antitrust Analysis of Bank Mergers: Recent Developments," Review of Banking & Financial Services, vol. 13 (July 1993).

44. 74 Stat. 129 (1960).

45. 12 U.S.C. 1828(c) (1976 edition).

46. 12 U.S.C. 1841-49 (1970) (1976 edition).

thereto."[47] In 1999, Glass-Steagall was totally repealed by the Gramm-Leach-Bliley Act.[48] Meanwhile, prohibitions on interstate banking were relaxed by the Riegle-Neal Interstate Banking and Efficiency Act of 1994,[49] which, according to Professor Carl Felsenfeld, changed the prevailing legal view from "the best banks are small banks" to "big banks are all right, too."[50] As inspection of Figure 1 shows, merger activity rose to peak levels shortly thereafter.

Supreme Court Interpretations

There were sufficiently many ambiguities and outright conflicts in early bank merger legislation that clear standards could emerge only through Supreme Court interpretations. Breaking a history of inactivity on the banking front,[51] the Department of Justice in 1961 brought five complaints against banking mergers, the first and most important of which was in the Philadelphia Bank case.[52] The Comptroller of the Currency had approved the merger of Philadelphia National Bank with Girard Trust, arguing that a larger bank (with some 36 percent of Philadelphia metropolitan area bank deposits) would by virtue of its size be better able to compete with New York banks in providing capital to sizeable Philadelphia enterprises. The Supreme Court rejected this view, articulating several key precedents. First, it dispelled the jurisdictional confusion in existing statutes, making it clear that DoJ could in fact act to enjoin banking mergers under the Celler-Kefauver Act. Second, it defined the relevant product market as "the cluster of products (various kinds of credit) and services (such as checking accounts and trust administration) denoted by the term 'commercial banking.'" Third, observing that for all but large depositors and borrowers, convenience and high transportation costs led most bank customers to confer their patronage on local community banks, it defined the relevant geographic market as a four-county area enveloping Philadelphia. It stressed too that "small businessmen especially are ... confined to their locality for the satisfaction of their credit needs." Fourth, it rejected defense testimony that competition among banks was and would continue to be vigorous. Fifth, it emphasized the combined banks' market share of roughly 36 percent and observed that after merger the four largest Philadelphia area banks would command 58 percent of deposits and net loans. Finally, it rejected the argument that merger would make the two banks more effective as competitors, observing that they had alternative ways to expand their local impact and stimulate

47. 12 U.S.C. 1843(c)(8) (1976 edition).

48. 113 Stat. 1338 (1999).

49. 108 Stat. 2338 (1994).

50. Carl Felsenfeld, "The Antitrust Aspects of Bank Mergers," Fordham Journal of Corporate & Financial Law, vol. 12 (2008) at p. 507.

51. The first important exception, no doubt bolstering the Justice Department's confidence, was U.S. v. Firstamerica Corp., Civil. No. 38139 (N.D. Cal. 1959), cert. den. at 361 U.S. 928 (1960).

52. U.S. v. Philadelphia National Bank, 374 U.S. 321 (1963).

economic development, concluding with the dictum that:[53]

> [A] merger the effect of which "may be substantially to lessen competition" is not saved because, on some ultimate reckoning of social or economic debits and credits, it may be deemed beneficial. A value choice of such magnitude is beyond the ordinary limits of judicial competence, and in any event has been made for us already, by Congress when it enacted the amended Section 7. Congress determined to preserve our traditionally competitive economy. It therefore proscribed anticompetitive mergers, the benign and the malignant alike, fully aware, we must assume, that some price might have to be paid.

One might object in hindsight that later, during the 1970s, rich new opportunities for consumers to invest funds of $10,000 or more at interest began to open up with the advent of bank certificates of deposit and money market funds. The information needed to identify such opportunities was available in major newspapers; and telephonic, mail, or even wire media sufficed to open and close accounts and transmit funds. But this potential loophole was essentially closed by additional Supreme Court decisions over the next seven years.[54] In particular, in its Phillipsburg decision, the Court focused on the key role that banks play in providing loans to local small businesses:[55]

> [I]f anything, it is even more true in the small town than in the large city that "if the businessman is denied credit because his banking alternatives have been eliminated by mergers, the whole edifice of an entrepreneurial system is threatened."

This view reflects a broader historical tradition in the United States seeing the yeoman small businessman as particularly worthy of sustenance, not only under antitrust but also under programs such as small business set-asides in defense procurement and special loan programs for small businesses. The specific logic for mergers may be undermined by a proliferation of internet-based loan and equity provision services in the future, but on this, the facts remain to be established.[56]

Supreme Court interpretations following Philadelphia Bank also clarified what burden of proof needed to be sustained by would-be merger partners in arguing that the concentration-increasing effects of their merger were more than offset by greater loan-issuing scale, risk-reducing diversification, or other merger benefits -- an issue to which we return later. In the immediate cases, the Supreme Court said in its Third National Bank decision that to sustain such a defense, the parties needed to prove that

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53. Idem. at 371.

54. Specifically, U.S. v. First National City Bank of Houston et al., 386 U.S. 361 (1967); U.S. v. Third National Bank in Nashville et al., 390 U.S. 171 (1968); and U.S. v. Phillipsburg National Bank and Trust Company et al., 399 U.S. 350 (1970).

55. 399 U.S. 350, 358.

56. Cf. note 24 supra. Money market funds invest inter alia in commercial paper with short maturities, providing (along with some S&L institutions) additional loan sources.

they had made a reasonable effort to achieve the benefits they predicted from the merger by feasible means short of merger.[57] This insight by the Supreme Court is an application of a principle with long standing in the field of operations research: the "with or without" rule. One analyzes the effects of an action against the outcome without that action, assuming that reasonable efforts to achieve the objective without the action has been pursued.[58]

Enforcement Actions

Interpretations of bank merger law by the Supreme Court between 1963 and 1970 established such strong precedents that blocking many mergers became the moral equivalent of kicking extra points in professional football: the antitrusters nearly always succeeded. The laws made it clear too that the favorable bias toward mergers traditionally exercised by bank regulators -- e.g., the Comptroller of the Currency, the FDIC, and the Federal Reserve Board -- could readily be overcome by antitrusters if a merger had significant concentration-increasing effects. Therefore, the various agencies began working together to gather and analyze the data needed to reach merger judgments. Indeed, in March 1995, joint Bank Merger Screening Guidelines were adopted by the Department of Justice, the Comptroller, and the Federal Reserve to guide banks as to what documentation would be required and what processes they could anticipate.[59]

A novice to the bank merger field, as the author is, might be inclined to analyze what happened by searching a source such as CCH Trade Cases to ascertain what merger complaints were brought and how they came out. This was done for the years 1985-2010 with results that were surprising, although they should not have been. In those 26 years, for which 10,321 voluntary commercial bank mergers are recorded in Figure 1, there were 22 years in which no anti-merger cases (i.e., either judicial

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57. Third National Bank, supra note 53, at 190. See also Phillipsburg, 399 U.S. 350, 372 (1970).

58. I found this approach especially pertinent in analyzing the claimed benefits from the proposed merger of Lockheed Martin with Northrop Grumman in 1998. Substantial cost savings were projected from closing nearly one hundred R&D centers. But careful analysis showed that in nearly every case, Lockheed Martin already had duplicative laboratories in most of the relevant substantive areas, suggesting that it could have achieved consolidation and maintained R&D scope without merger. The merger was abandoned, given opposition from both the Defense Department and the Department of Justice.

59. See "Bank Merger Competitive Review -- Introduction and Overview (1995)," dated "current as of 9/2000)," downloaded from www.justice.gov/atr/public/guidelines/6472.htm; and Constance Robinson, "Bank Mergers and Antitrust," speech text, May 30, 1996, www.justice.gov/atr/public/speeches/1003.htm.

decisions or consent settlements) were reported.[60] In the seven recorded bank merger consent decrees (including two involving complete debit card or ATM network combinations rather than bank branches),[61] a total of 46 countable units were required to be divested.

The explanation for this seeming absence of formal litigation is that the precedents evolved through Supreme Court interpretations were so strong, and the threat of deal-breaking delays through both an automatic 30-day stay and a temporary injunction against the subject merger if litigation began, that would-be merger makers regularly brought their plans before the regulatory authorities in advance and negotiated voluntary settlements without requiring the federal (or state) antitrust authorities to file a formal complaint, thereby preventing the action from coming to the notice of the CCH reporting system. According to a Department of Justice economist immersed in the merger screening process:[62]

> The U.S. Department of Justice ... reviews roughly 600 bank mergers per year, of which it 'challenges' roughly one, although these 'challenges' do not entail the filing of complaints in district court. In fact, the DoJ has not filed a complaint against a bank merger since 1993.[63] Rather, approximately once per year the DoJ issues a press release announcing that competitive concerns with a bank merger have been resolved through the divestiture of branches along with associated deposits and outstanding loans.

A tally for parts of the years 1996 through 1999 released jointly by the Department of Justice and the Federal Trade Commission reveals that the "once per year" assertion significantly underestimates the volume of informal merger challenges.[64] From the

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60. Several cases were reported that involved banks, but on charges other than making allegedly anticompetitive mergers. Most numerous were nine failures of would-be merger partners to file Hart-Scott-Rodino notifications. Also recorded were various exclusive dealing cases, health insurance company acquisitions, and an alleged conspiracy.

61. The two exceptions to a focus on local commercial banking involved Visa U.S.A. and Master Card International, CCH Trade Cases Para 69,016 (1990) (brought solely by state attorneys general); and First Data Corp. and Concord EFS, CCH Trade Cases Para. 74,481 (2004) (brought jointly by DoJ and state attorneys general).

62. Gregory J. Werden, "Perceptions of the Future of Bank Merger Antitrust: Local Areas Will Remain Relevant Markets," Fordham Journal of Corporate& Financial Law, vol. 13 (2008), p. 582.

63. The outcome of that complaint is included in my CCH sample.

64. Merger Challenges Data, Fiscal Years 1999-2003 (December 18, 2003), www.justice.gov/atr/public/201898.htm. Am appendix provides more detailed qualitative information on mergers treated

broader tabulation of merger cases in all industries, one finds that actions were taken in 19 bank merger cases over the span of three and one-third years. In only one case was a bank merger stopped completely.[65] All others ended with the divestiture of one or more branches, totalling 524.

In sum, the available evidence reveals that the antitrust authorities have held a strong bargaining position as a result of judicial precedents, and they have used their power to negotiate the divestiture of selected branches posing threats to competition from merging parents that in most cases persisted in effecting their merger, presumably retaining a much larger number of branches. There appears to be little published insight into how the bargaining process works. It would be reasonable to assume that would-be merger makers negotiate with the government and seek to divest branches in a manner that sacrifices minimal competitive advantage. As an investment banker representing would-be acquirers of the divested branches observed about a major New England merger case, "The point was to find absolutely the worst operator possible."[66] The account goes on to assert that the branches were divested to a "weakling" and that the merging companies "quickly won back old customers" from the new acquirer.

It is clear that most divestitures were of branches, and the market definitions on which they rested were for narrow geographic areas. One cannot avoid asking, given the wave of massive mergers recorded in Figure 2, and given that many of the lines in which the largest investment banks excelled were among the highly concentrated fields covered by Table 2, why were there no anti-merger actions against those concentrations? Confronted with a record that appears bare of definitive explanation, the most likely hypothesis is that the antitrust agencies drew their thunder from the local market focus of Philadelphia Bank and subsequent Supreme Court decisions, which provided at best a minimal fulcrum for challenging mergers in other financial product markets.[67] Indeed, one might assert that the antitrusters were fixated on local market consolidations and as a result beheld the mote while ignoring the beam.[68] Support for this inference comes inter alia from the fact that the bank merger screening guidelines and worksheets issued by the Department of Justice in 1995 focus almost exclusively on local geographic markets.[69] That statistical data on the structure of more specialized investment banking functions were almost totally lacking, so that enforcers may not

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between 1996 and 1999. A separate table on bank merger cases reveals that between 1999 and 2003, 56 relevant banking markets were analyzed.

65. First Bank of Grants/Grants State Bank (May 1997). The merger involved two small banks in Arizona.

66. Shawn Tully, "Can This Man Fix America's Biggest Bank?" Fortune, July 25, 2011, p. 144.

67. The two debit card network cases identified in footnote 60 supra appear to be the main exceptions.

68. Matthew Chapter 7, verse 3.

69. See note 59 infra.

have perceived the concentration-increasing tendency of major mergers, could have contributed to their neglect. Whatever the explanation, which cries out for further illumination, enforcers appear to have allowed an elephant to escape into the countryside even while they were doing good work to curb loan and deposit provision concentration increases in local markets.

Efficiencies Defenses

If one were to propose antitrust action against concentration-increasing mergers in specialized investment banking fields, one must recognize that such mergers might conceivably be defended on the argument that they are efficiency-increasing. Here lies another mysterious absence in the vast record of anti-merger enforcement. The Bank Merger Act of 1966 authorized prohibition of banking mergers whose effect might be "substantially to lessen competition" unless the responsible enforcement agencies found "that the anticompetitive effects of the proposed transaction are clearly outweighed in the public interest by the probable effect of the transaction in meeting the convenience and needs of the community to be served."[70] This might in more modern jargon be construed as an efficiencies defense, arguably invalidating the Supreme Court's Philadelphia Bank dictum proscribing mergers, "the benign and the malignant alike." The Supreme Court returned to the issue in its 1968 Third National Bank decision, stating that for the enforcement authorities to sustain the "convenience and needs" defense, they must be persuaded that non-merger means of securing alleged public interest advantages had been either tried and failed or shown to have been unlikely to succeed.[71] Whether such efforts were made and failed is unknown. What is clear is that large numbers of mergers were successfully challenged despite the escape hatch. In 1984, after issuing Merger Guidelines in 1982 rejecting the possibility of efficiency defenses "except in extraordinary cases,"[72] the Department of Justice reversed field and acknowledged that it would consider clear and convincing evidence that a merger "may be reasonably necessary to achieve such efficiencies."[73] Later revisions maintained the essence of the 1984 efficiencies defense option. Absent a formal judicial record, it is unclear whether efficiency defenses have been attempted and taken seriously in bank merger negotiations since 1984. My own experience in what I believe was the first post-1984 nonbank merger defense argued in court was that the Department of Justice attempted to restrict the scope of such defenses severely and that the district court found what might be a precedent-setting decision too difficult and hence waived comment, deciding the case on other grounds.[74] But again, our insight

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70. 12 U.S.C. Para. 1828(c).

71. 390 U.S. 171, 190-192.

72. U.S. Department of Justice Merger Guidelines, June 14, 1982, p. 27.

73. U.S. Department of Justice Merger Guidelines, June 14, 1984, section 3.5.

74. U.S. v. Archer-Daniels-Midland Co. et al., 871 F. Supp. 1400 (1991). See also Scherer, Competition Policy, Domestic and International (Edward Elgar: 2000), Chapter 18, reprinting my May 1987 affidavit in the case on the logic of efficiencies defenses.

on what happened in bank merger negotiations is severely limited.

If antitrust action were to be taken against large banking mergers, one can expect that efficiencies defenses will be advanced. It is useful to ask, therefore, how the question has been illuminated in the financial economics literature.

Numerous statistical studies have attempted to provide answers. Some have focused on net profitability, some on interest costs, and some on non-interest expense ratios. Much of the research has been done by Federal Reserve Board staff, who had the advantage of greater data access. Reflecting on that work, Alan Greenspan observed in 2010 that research by Federal Reserve staff "has been unable to find economies of scale beyond a modest-sized institution."[75] An early summary of Federal Reserve staff studies concluded that cost savings were realized mainly through bank size increases up to deposit levels of approximately $500 million -- far below the scale of the largest trillion-dollar financial institutions.[76] Citing a later staff study, former Fed staff member Steven Pilloff reported that "the precise point at which scale economies disappear" (or are overcome by diseconomies) appears to lie at asset levels around $10-25 billion -- a small fraction of the trillion-dollar levels surpassed by four banks covered by Figure 5.[77] Pilloff reported non-interest cost as a percent of an income measure dropping from 62 percent for banks with assets between $0.5 and $ 1.0 billion to 57 percent for banks with assets in the range of $1 billion to upwards of $10 billion. A still newer study by Stimpert and Laux using regression equations found non-interest cost ratios falling (by undeterminable rates) at smaller sizes but rising at scales well below the asset and deposit volumes achieved by the largest banks.[78] On the other hand, their equations reveal continuing increases in banks' net income ratios out to the largest size ranges -- a result that could reflect either scale economies or greater pricing power for the largest banks.

My own research on manufacturing industries (not banking) several decades ago found that the most persistent single source of scale economies was the ability of the largest firms to raise new capital at lower interest rates, presumably because of enhanced risk diversification and lower transaction costs relative to flotation volume. However, the interest cost advantage was considered to be slight to moderate relative to sales for most of the industries examined.[79] A sophisticated new bank study by James

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75. "The Crisis," address at the Brookings Institution, second draft (found on the worldwide web), March 9, 2010, p. 32.

76. Patrick H. McAllister and Douglas McManus, "Resolving the Scale Efficiency Puzzle in Banking," Journal of Banking and Finance, vol. 17 (April 1993), pp. 389-405.

77. Supra note 3 at 286-287.

78. J. L. Stimpert and Judith A. Laux, "Does Size Matter? Economies of Scale in the Banking Industry," Journal of Business and Economics Research, vol. 9 (March 2011), pp. 47-55.

79. F. M. Scherer et al., The Economics of Multi-Plant Operation: An International Comparisons Study (Harvard University Press, 1975), pp. 284-289 and 335.

Kwak reaches similar but more interesting conclusions.[80] Kwak focused on banks' average rate of interest paid out as a percentage of deposits in 2009. Controlling in a multiple regression for diverse measures of portfolio risk, his initial finding was that interest costs fell by roughly 20 basis points (i.e., one fifth of a percent) with each tenfold increase in asset size, e.g., from $10 billion to $100 billion. This advantage was reduced by about two basis points when he included an additional variable singling out banks with assets exceeding $100 billion. Being in that "too big to fail" category, however, reduced interest costs by 50 basis points -- an advantage that did not appear when a comparable analysis was made for pre-crisis year 2004. In that earlier year, he found an apparently persistent decrease in interest costs of nearly 16 basis points with each tenfold increase in assets. Interpreting his results for 2009 is made difficult by the fact that the average interest cost for all banks, large and small, was only 1.97 percent of assets. This occurred when the Federal Reserve was lending trillions of dollars at very low interest rates to both small and large banks. Nevertheless, Kwak's results for 2004 appear to confirm the hypothesis that financing economies of scale persist for banks out to the size of the very largest banks.

All of the scale economy studies reviewed thus far take a blunderbuss approach, statistically estimating profitability or cost ratios for the aggregate of banks' activity. The only research known to me that focuses on narrower facets of banking activity was undertaken by the Clearing House Association, which apparently obtained the needed data from at most ten of the 17 large banks that comprise its owners.[81] Nonlinear regression equations were computed taking cost indices (in most cases, with many costs excluded) as the dependent variable and as independent variable an index of bank size, with the relevant transaction volume of a bank with $50 billion in assets used as the base index value of zero.[82] The resulting best-fitting cost predictions are shown as solid curved lines in Figure 6 for six of the seven product line activities studied -- online bill paying, check processing, credit card processing, debit card processing, automated clearing house transaction processing, and wire transfer proocessing.[83] In all cases the cost curves slope downward, implying economies of scale persisting even out to the size of the largest owner banks (presumably, Bank of America, J.P. Morgan Chase, and Citigroup). The curves flatten out, consistent with other scale studies, implying diminishing marginal benefits of size. The dots surrounding the fitted curves are actual cost index observations drawn from two to four years of data. To disguise the actual

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80. Kwak, supra note 18.

81. Understanding the Economics of Large Banks (2011). The report itself is available on the Association's web site. I am grateful to the association's chief economist, Sujit Chakravorti, for providing a copy of the more detailed Appendix.

82. Little qualitative information on the sources of measured scale economies is provided. Compare Clifford Pratten, Economies of Scale in Manufacturing Industry (Cambridge University Press: 1971); and F. M. Scherer, Economies of Scale at the Plant and Multi-Plant Levels: Detailed Evidence (deposited in several research libraries: 1975).

83. No curve was presented for securities transfer operations.

data, however, the authors have added randomly varying dummy points. For example, in the online bill paying figure, 30 dots are visible even though only 20 actual observations were obtained. Assuming (debatably) that similar scale economies apply for unmeasured product line costs and aggregating their results, the (unnamed) authors conclude that if all U.S. banks with assets exceeding $50 billion were held to transaction volumes associated with a bank reporting assets of $50 billion, total relevant costs annually (calculated from the computed cost curves, not from actual individual data) would be $25 billion to $45 billion higher. For perspective, the authors observe that 26 banks with assets in excess of $50 billion held assets totalling $12 trillion at the time the report was prepared.

The figures reproduced from the Clearing House report in Figure 6 suggest a critical question. For all of the product lines studied, individual bank costs represented by dots scatter, as one might expect in a regression analysis, around the fitted cost curve. But for all but the debit card curve, the reported points pose a puzzle. There are points, i.e., relative cost ratios, for relatively smaller banks (among the universe of very large banks) with costs as low as those of the very largest banks. To be sure, the fitted curves slope downward because their left-hand extreme is pulled up by some very high cost observations. But if relatively small ($50 billion) banks can achieve costs as low as those of the largest banks, why are others less successful? Clearly, economies of scale are not so compelling that they necessitate higher costs for smaller banks. Somehow, some of the smaller banks circumvent them -- unless the lowest right-hand side observations are all artificially generated disguise dummies. An alternative hypothesis might be that a dynamic process leads most, but not all, banks with low costs to achieve very large size, leaving behind mostly high-cost banks but for unexplained reasons also some highly efficient entities. How this puzzle might be reconciled is not addressed in the Clearing House study.

The study concedes[84] that some of the estimated benefits might be achieved through means other than having individual banks reach very large scale, e.g., through centralization of high-scale-economy services in organizations that provide the desired services to all banks on a for-fee basis. Mentioned as examples are credit and debit card services, although clearing house functions and securities transfer processing seem equally plausible candidates. If economies of scale indeed continue out to the largest product volumes -- a hallmark of natural monopoly -- vertical disintegration is an appropriate solution to Ronald Coase's "what is the firm" puzzle.[85] Given strong economies of scale, the disintegrated functions would have substantial monopoly power. Arguagly, therefore, they should be required to provide services to all legitimate users at regulated "fair" rates.

Also estimated in the Clearing House study are benefits (e.g., in the value of customer convenience and transaction time saved as well as scale economies) from the wide scope of activities pursued and the greater geographic reach of large bank branches, and from contributions large banks make to the spread of technological

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84. P. 41 of the main report.

85. Ronald Coase, "The Nature of the Firm," Economica, vol. 4 (1937), pp. 386-405.

innovations.[86] Here too, methodological questions can be raised,[87] but we advance to a conclusion.

The Clearing House study mounts an important challenge to the conventional wisdom that scale economies are fully exhausted at relatively modest bank sizes. That both the sources of evidence and the authors who analyzed it are kept anonymous lessens the report's credibility. So also does the fact that the organization producing it may have had an axe to grind on behalf of its large-bank owners. Greater transparency and, as always, further research are needed if the report's findings are to be accorded definitive weight. And if scale and scope economies really are persistent out to very high product volumes, alternative means of achieving them need to be explored. In the mean time, one must admit that if an efficiencies defense were permitted in challenges to individual large-bank mergers, the possibility of credibly compelling pro-merger evidence cannot be ruled out. Difficult tradeoffs might be required.

Conclusion

The enforcement of the merger antitrust laws appears to have achieved substantial success in limiting what otherwise could have been additional concentration in local banking markets. However, the record in preventing the growth of leading commercial and investment banks to gigantic size -- among other things, size posing real "too big to fail" risks -- reveives much lower grades. Reversion to 1933 Glass-Steagall standards -- abrogated fully in the Gramm-Leach-Bliley Act of 1999 and not reinstated as part of the Dodd-Frank law -- deserves serious consideration. Whether the eggs have been so thoroughly scrambled that renewed separation of commercial banking from investment banking functions would be infeasible is a question that demands attention. It could be addressed inter alia as part of the forward planning for future crisis-induced "resolution" required by Dodd-Frank. Or alternatively, a separate study could be mounted -- most likely, by the excellent research staff of the Federal

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86. On ATMs, one of the technological innovations studied, independent research supports an inference that diffusion was indeed more rapid among the larger banks. See Timothy Hannan and John McDowell, "The Determinants of Technology Adoption: The Case of the Banking Firm," Rand Journal of Economics, vol. 15 (Autumn 1984), pp. 328-335; and Garth Saloner and Andrea Shepard, "Adoption of Technologies with Network Effects: An Empirical Examination of the Adoption of Automated Teller Machines," RAND Journal of Economics, vol. 26 (Autumn 1995), pp. 479-501.

87. For example, larger banks are said to have more extensive branch or ATM networks, saving consumers time in reaching them. But even if this were true, many consumers would choose to do their business as part of a multitask trip that carries them near the relevant banking location rather than incurring the cost of a special trip. Similarly, banks with international scope clearly provide some convenience to U.S. companies with multinational operations. But one might expect such companies to establish parallel relationships with banks at home in the overseas locations -- banks that often have branches in the United States handling inter alia exchanges of foreign and dollar currencies.

Reserve.

An even tougher alternative would be to address excessive merger-induced concentration through the antitrust laws. The first requisite would be to assemble reliable data on concentration in economically meaningful narrow product lines within the too-broad universe of commercial and investment banking. Doing so would be a return to the good work done by the Bureau of Corporations in the 1900s, providing an essential factual and analytic foundation for the Standard Oil and American Tobacco divestitures. It is conceivable that unscrambling concentrating-increasing bank mergers would be more difficult than breaking up those loosely integrated entities a century ago,[88] but only careful reseach can illuminate both the dangers and the possibilities. Certainly, plausible efficiencies defenses would have to be taken seriously. Short of retroactive merger reversal, the least one can reasonably ask is that a broader approach be taken to merger review in the future, so that undue concentrations are prevented in specialized investment banking product lines as well as in localized commercial banking markets.

88. See e.g. Kenneth Elzinga, "The Antimerger Laws: Pyrrhic Victories," Antitrust Bulletin, vol. 31 (Summer 1986), pp. 431-450.

Table 1

Assets in 2010 of Financial Institutions Covered by Flow-of-Funds Accounts*

	Assets ($ billions)
Included in Figure 3 Denominator:	
Commercial banking	14,402
Savings institutions	1,244
Credit unions	911
Money market mutual funds	2,755
Total	19,312
Excluded:	
Life insurance companies	5,177
Property/casualty insurance companies	1,403
Private pension funds	6,080
Mutual funds	7,963
Closed end funds	246
Exchange-traded funds	986
Asset-backed securities issuers	2,454
Finance companies	1,595
Real estate investment trusts	274
Security brokers and dealers	2,075
Subtotal	28,253
Grand Total	47,565

*Source: Statistical Abstract of the United States: 2012, p. 731.

Table 2*

Share of Various U.S. Banking Activities Held by the Six Largest Banks (with Assets of $500 Billion or More)

	Estimated Share (Percent)
Retail deposits	37
1-4 residential mortgages	76
Home equity loans and credit lines	60
Consumer loans and financing	56
Internet banking	50
Automatic teller machine transactions	25
Branch activity	20
Origination of automatic inter-bank clearings	60
Other clearing and federal wire transactions	66
Debit card activity	63
Credit card activity	76
Custody account volume	38
Commercial real estate	26
Credit and inventory loans	52
Small business loans	17
Cash management facilities	59
International lending	88
Equity capital market flotation	100
Debt market flotation	94
Merger and acquisition support	100
Syndicated loans	86
Trading of ordinary securities	100

*Source: The Clearing House, Understanding the Economics of Large Banks: Appendix (New York: 2011), pp. 11-12.

Figure 1

Disappearances Due to Voluntary and Resolution Mergers, 1975-2011

Insured U.S. Commercial Banks and Trust Companies

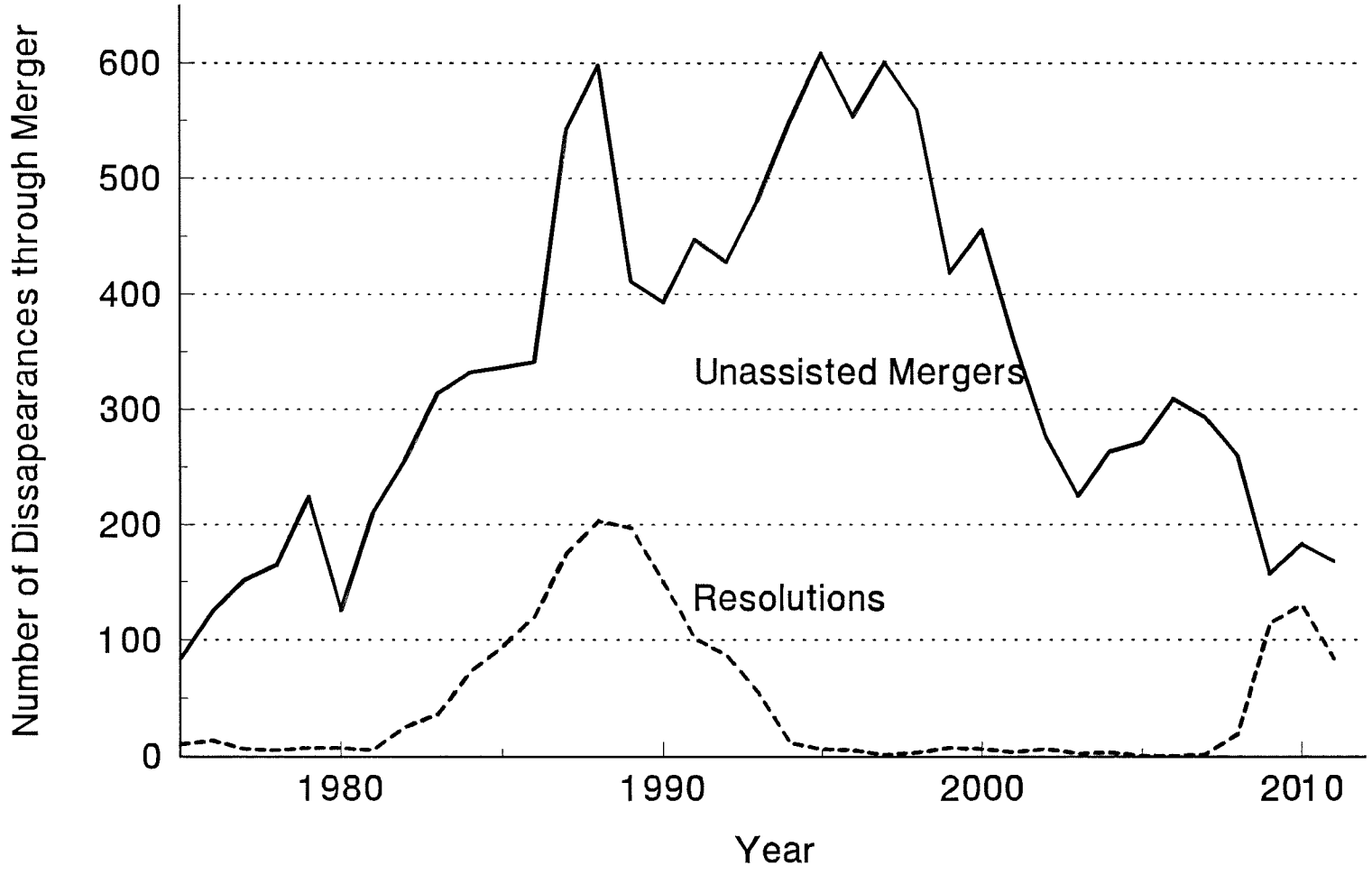


Figure 2

History of Mergers for the Six Leading Banking Firms of 2009: 1985-2008

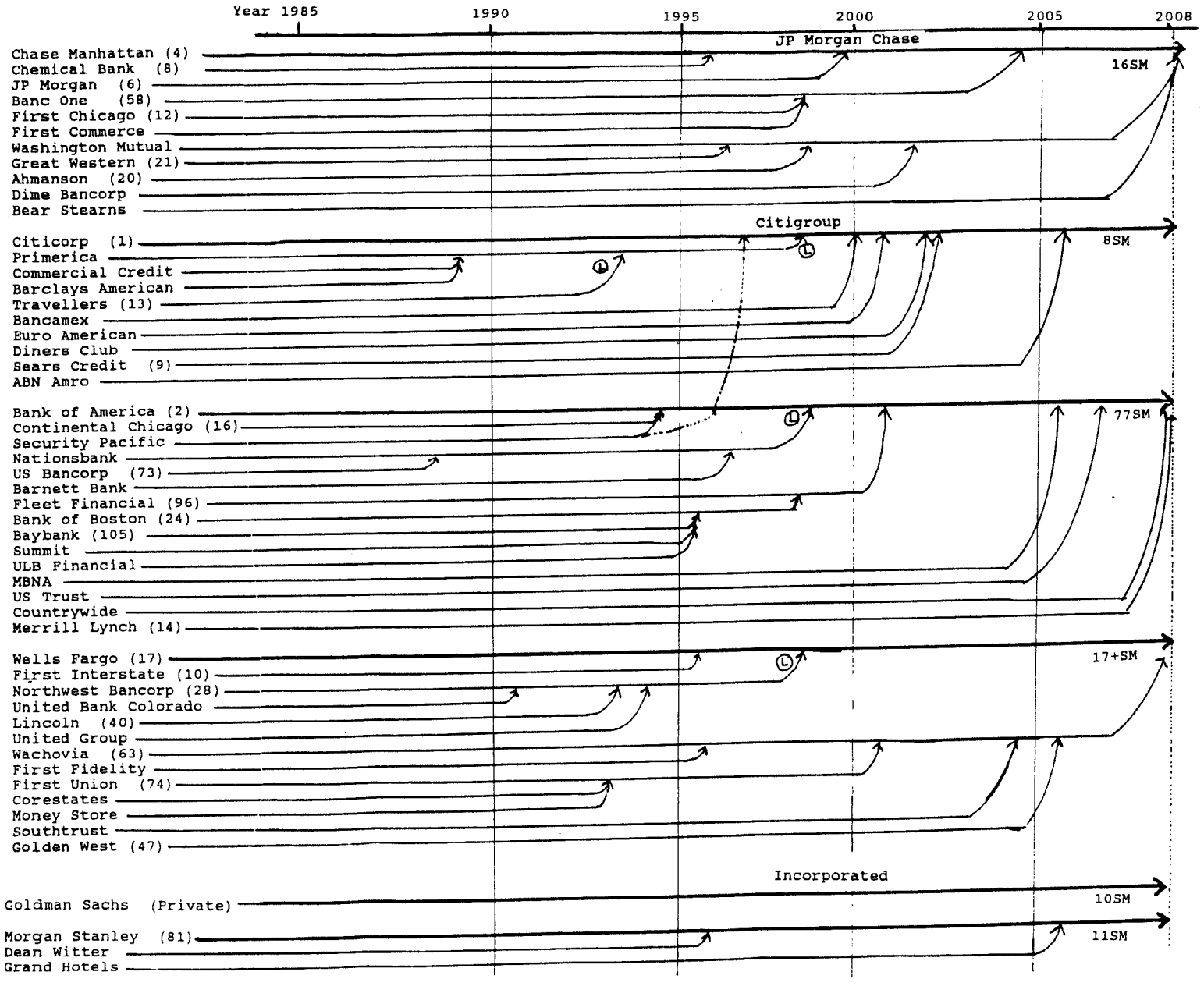


Figure 3

Top Ten U.S. Banks' Share of Banking Assets

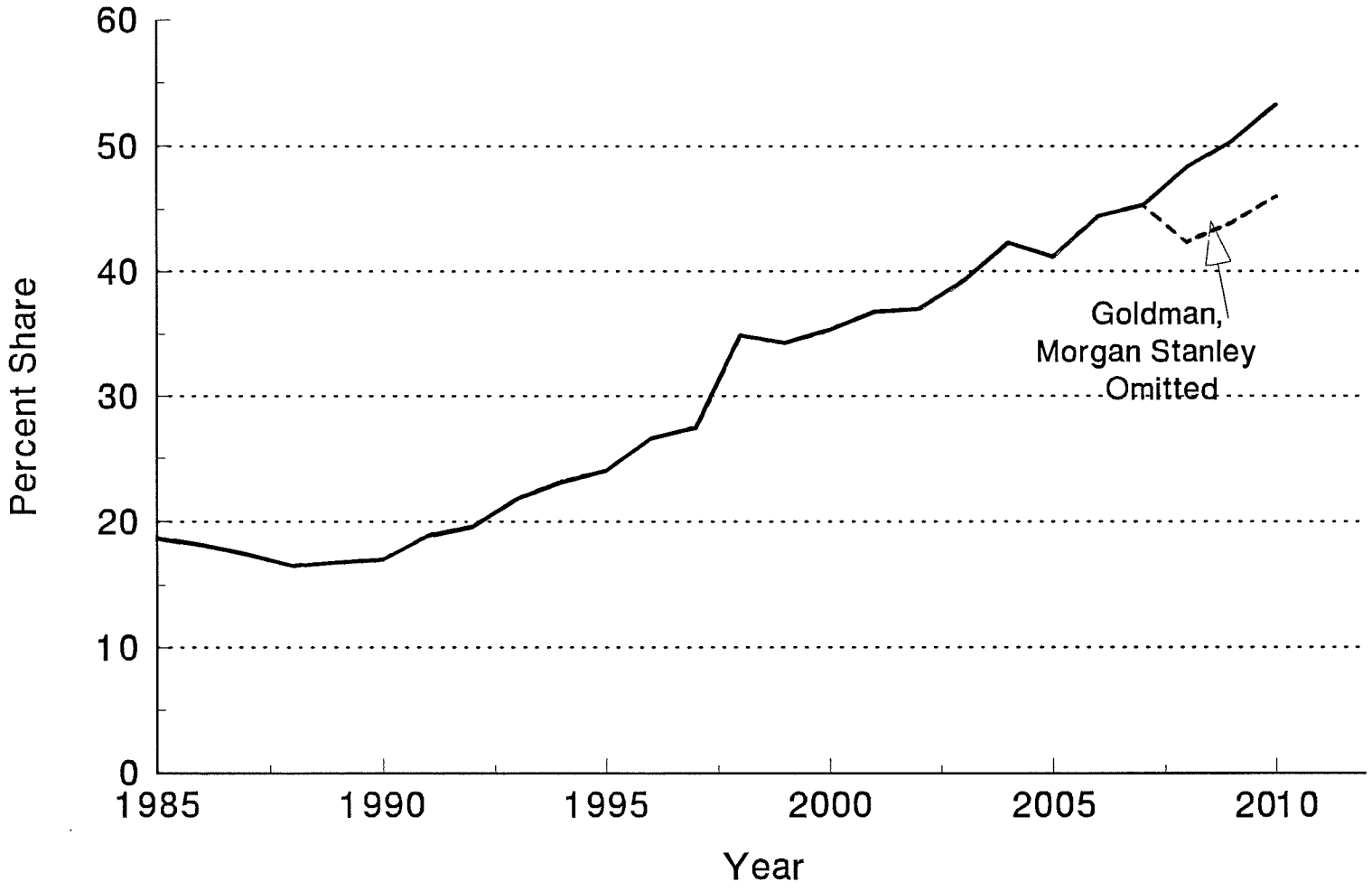


Figure 4

Assets of Top Ten Plus Two U.S. Banks in 2010

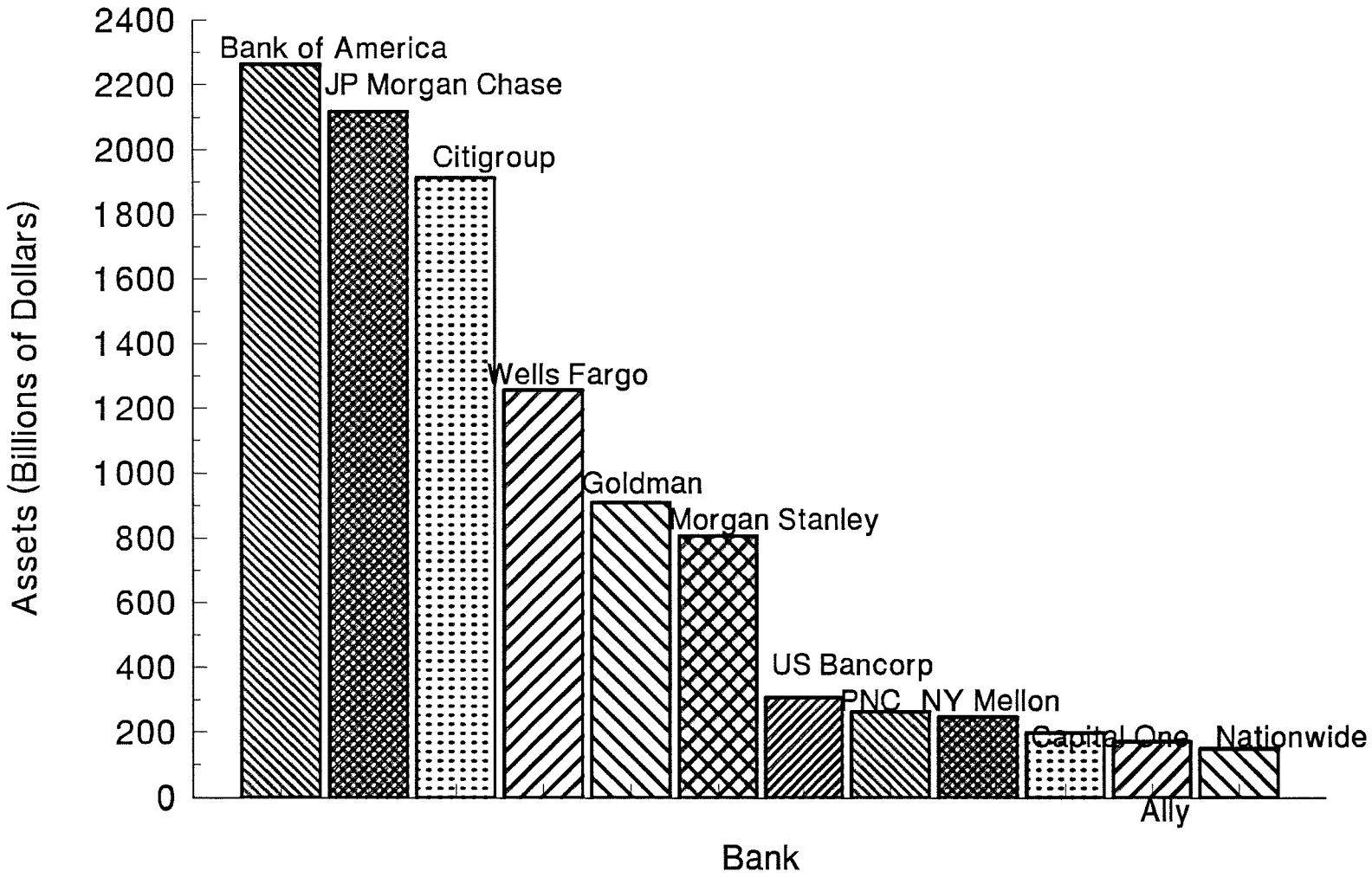


Figure 5

Financial Corporation Profits as Percent of All U.S. Corporate Profits

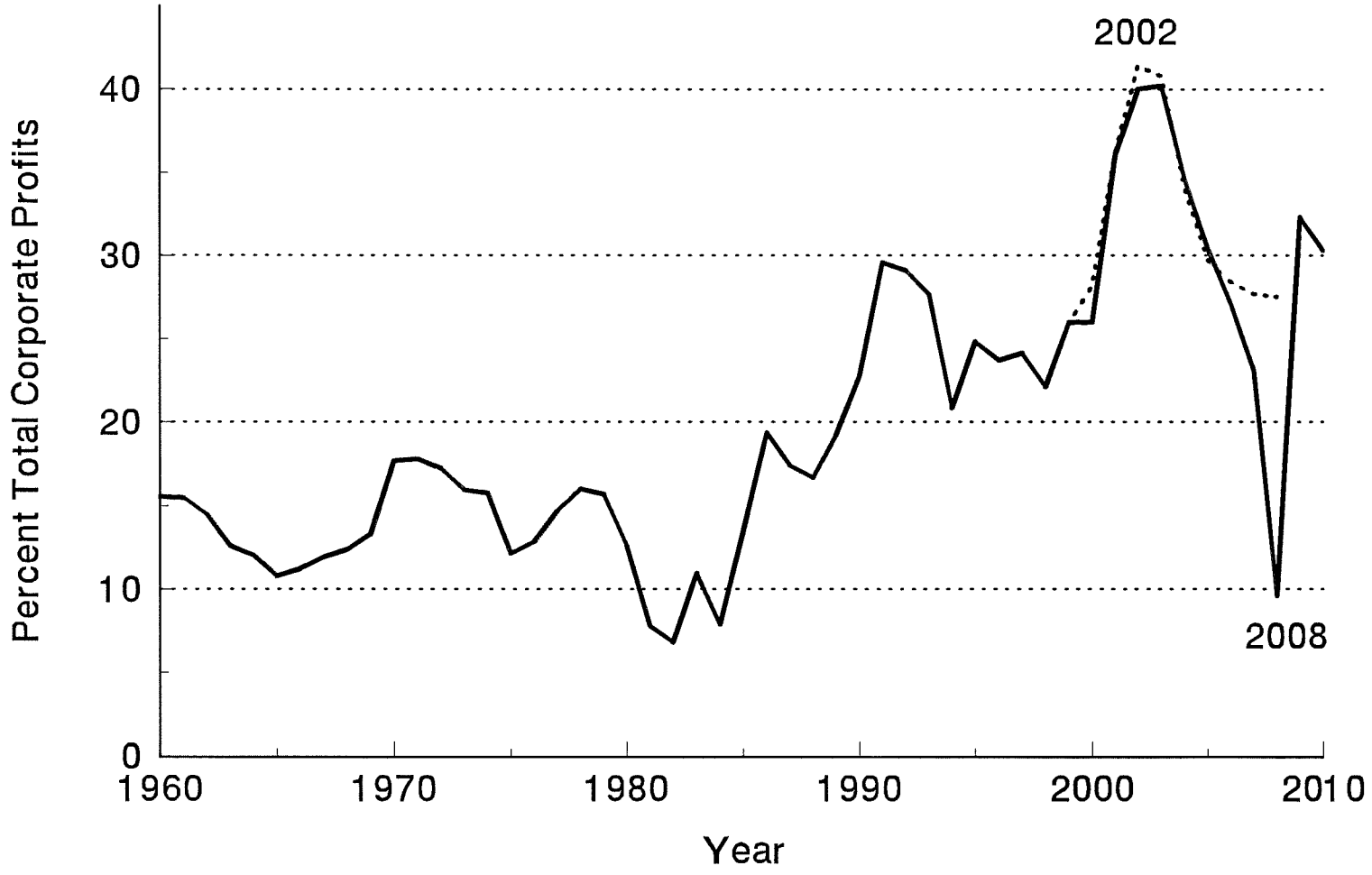
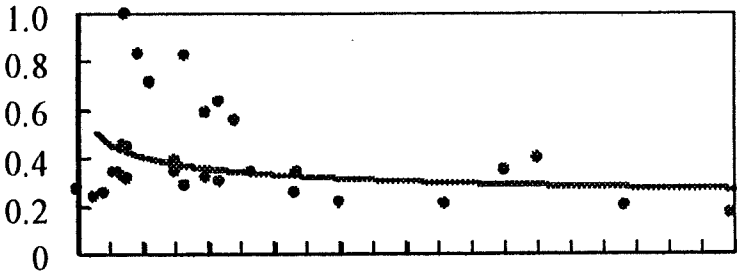
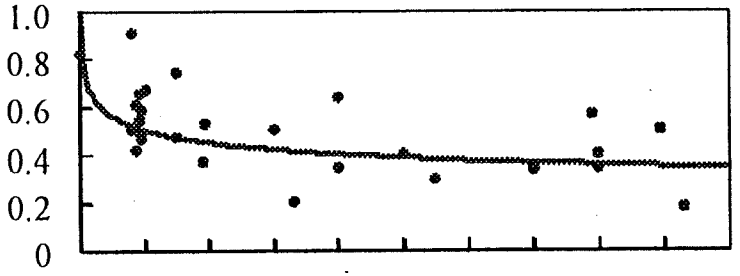


Figure 6: Clearing House Product Line Cost Curves

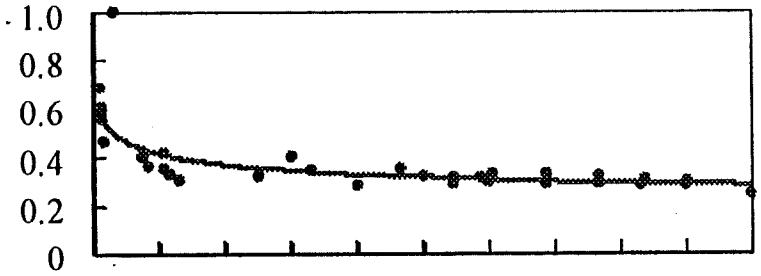
Online billpay[3] unit cost (n = 20, 5 banks[1])



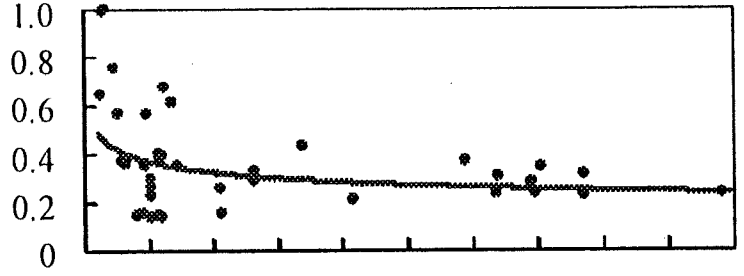
Check processing unit cost (n = 13, 5 banks[1])



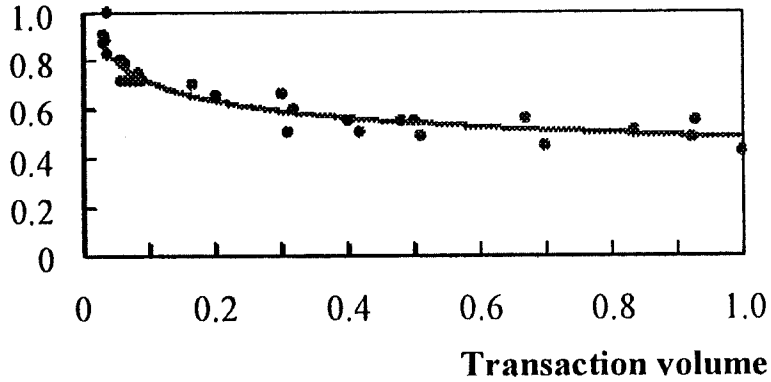
Credit card unit cost (n = 20, 6 banks[1])



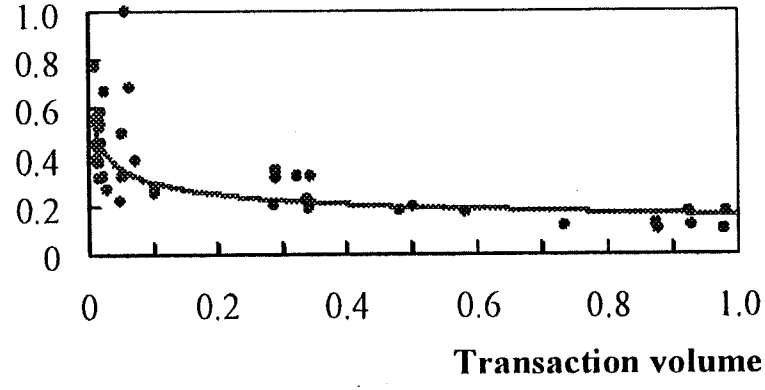
ACH unit cost (n = 31, 7 banks[1])



Debit card unit cost (n = 12, 6 banks[1])



Wire unit cost (n = 34, 7 banks[1])



1 Dummy points are randomly generated along curve to disguise participant data.
2 Unit costs and transaction values are normalized to 1.
3 Online-bill-pay unit costs are measured per active user.
SOURCE: TCH large-bank-study participants.