A perplexed economist confronts 'too big to fail'

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Abstract

This paper examines premises and data underlying the assertion that some financial institutions in the U.S. economy were "too big to fail" and hence warranted government bailout. It traces the merger histories enhancing the dominance of six leading firms in the U. S. banking industry and he sharp increases in the concentration of financial institution assets accompanying that merger wave. Financial institution profits are found to have soared in tandem with rising concentration. The paper advances hypotheses why these phenomena might be related and surveys relevant empirical literature on the relationships between market concentration, interest rates received and charged by banks, and economies of scale in banking.

JEL categories G2, L8.

Key words: systemic risk, market concentration, mergers, scale economies.

1. Introduction

The bailouts rescuing failing financial institutions that both the U.S. government and European governments have found themselves compelled to sustain during the recent economic crisis have repeatedly raised the question, "How big is too big?" in bank size. For me, as a more or less traditional industrial organization economist, this poses a particular challenge. From early in my career, I had drummed into my head the mantra of MIT's Morris Adelman, "Absolute size is absolutely irrelevant."[3] And what we appear to be addressing is in fact absolute financial institution size.

What Adelman was saying is that the core understanding of industrial organization economists, built up over decades of research, was that monopolistic influences on price-setting depended upon *relative* size -- i.e., the size of the price setters *relative to* the market in which they operated. Pure monopoly is of course the extreme case: the monopolist commands close to 100 percent of the relevant market. Oligopoly is the case that has proved both most interesting in the real world and most difficult. The individual sellers are large relative to the market, and a few of them have sufficiently large market share, so that they are acutely aware of their interdependence in pricing. Given this size relationship, as economists from Augustin Cournot (1838) to Edward Chamberlin (1933) insisted, individual firm sizes sufficient to give the oligopolistic sellers a large share of the markets they serve were likely to facilitate prices elevated about the competitive level, inefficient resource allocation, and maldistribution of income. But this is not my initial 'too big' focus. I shall return later to argue that it may be more relevant than we might casually assume.

Although Morry Adelman rarely missed the mark, in this case, I believe, absolute size does have relevance. There are at least three reasons why this may be true.

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[2] This paper was originally written for a conference at the Fordham University Law School March 12, 2010.

[3] Adelman (1964). See also Stigler (1956, p. 37).

First, as every newspaper reader recognizes, financial institutions may be so large relative to the whole world of finance, regardless of their size in individual price-setting contexts, and also so interdependent in their relationships, that failure of one or more institutions has *systemic* consequences. That is, one large institution's failure, and its attendant inability to meet obligations to a host of financial counter-parties, can jeopardize the health of numerous other banks. And if many banks' credit "freezes up" as a result of these failures, the prosperity of the economy as a whole can be jeopardized. This is a real and serious problem, one known to economists since at least the time of Adam Smith.

Second, absolute size may carry not only this hazard, but it may also yield economies of scale and scope that make individual banks better able to perform their vital functions, providing credit to economic actors on more favorable terms. Whether this is true is an empirical question. I shall return to it, constrained to be sure by severe limits on economists' knowledge of such matters.

Third, financial institutions that are large in absolute size may have deep and well-filled pockets with which they can among other things hire lobbyists, support individual political parties and election candidates, and, under the recent Supreme Court reinterpretation of the U.S. Constitution's first amendment, mount advertising campaigns in direct support of or opposition to election candidates.[4] In *Federalist Paper* No. 10, James Madison warned against the political power of factions resulting from "the verious and unequal distribution of property" ... " who are united and actuated by some common impulse of passion, or of interest, adverse to the rights of other citizens, or to the permanent and aggregate interests of the community." Robert Bork (1966; 1978, Chapter 2) has argued that concern over the resource misallocation that comes from monopoly power in specific markets -- i.e., relative size -- was what primarily motivated the U.S. Congress to enact the Sherman Antitrust Act in 1890. Critics such as Robert Lande and I have argued that Bork's interpretation is erroneous.[5] I leave for another forum the more detailed exploration of this debate.

Here I offer only one additional strand of historical evidence -- Figure 1, drawn by artist Joseph Keppler for *Puck* magazine, January 23, 1889 -- a year before the Sherman Act was passed. One cannot view it without recognizing that the U.S. public was alarmed at the time about the political power of the great trusts, for which we might now substitute bloated figures for JP Morgan Chase, Bank of America, and Goldman Sachs. It would be hard to deny that public concerns over the trusts' power in federal and state legislatures were an important stimulus to the Sherman Act's passage.[6] And now, 120 years later, there is abundant reason to fear the enormous political power of the financial institutions, said by Drum (2010) to own Washington "lock, stock, and barrel." In 2008, for example, the finance lobby is said to have contributed $475 million to political candidates and their supporting party organizations -- more than twice the

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[4] Citizens United v. Federal Election Commission, 130 Supreme Court Reports 876 (January 2010).

[5] My principal venture into the debate was Scherer (1990a).

[6] See also Thorelli (1954), especially Chapters 2, 3, and 6.

level of contributions from the second-largest lobby, the health care industry.[7] To be sure, an industry of relatively small entities such as farmers ($65 million in 2008) might amass large political contributions through the efforts of industry-spanning trade associations. But what evidence we have suggests that collective action groups such as the American Bankers Association were relatively minor factors in the torrent of political donations.[8]

2. The Stylized Facts

Let me proceed by laying out what economists call "stylized facts" -- that is, parcels of evidence without direct theoretical or proven causal connections to the issues of bank size. I then proceed to examine what we actually know about causal links.

The first salient fact is that the banking industry has experienced during the past three decades a merger wave of monumental proportions. Dean Amel of the Federal Reserve Board staff reports (2002) that between 1990 and 2001 -- i.e., before the mega-mergers precipitated by the 2008 financial crisis -- U.S. banks consummated mergers and acquisitions valued at more than $900 billion.[9] My own attempt to determine what happened is best reported in two steps.

First, from *Fortune* magazine's annual lists of the 100 largest commercial banking and diversified financial companies, I began with the listing published (from 1984 financial reports) of the largest corporations as of 1985 and traced what happened to them by the close of 2008. Among the 30 leaders ranked by assets as of 1985, only nine survived in more or less recognizable form at the end of 2008. Eighteen of the 30 disappeared through mergers; three failed and were liquidated by governmental financial guarantors.

The second step is embodied in Figure 2. It traces principal events in the merger histories of six corporations that by the end of 2008 had become the largest U.S.-based financial entities measured by asset volume.[10] Altogether, 53 substantial components are found to come together into six surviving entities, ranked in order of end-of-2008 assets. 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 consummating a merger to adopt a new name based upon the name of its acquisition target. The analysis was able to track only the most significant mergers. At the end of each surviving company trajectory is a number followed by "SM," for small mergers. That number was obtained by tracking smaller acquisitions reported in the company histories published in *Moody's (now Mergent's) Bank & Finance Manual*. It is probably incomplete, but altogether, 139 acquisitions too small to be

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[7] Drum (2010) at p. 42.

[8] Data on contributions are lacking, but in 2008, ABA's lobbying outlays in Washington were 2.0 percent of total finance industry lobbying expenditures.

[9] An even higher figure of $3.6 trillion for the years 1990-2005 is suggested by Steven Piloff (2009), pp. 269-270.

[10] For a similar but somewhat more limited analysis of the top four banks as of 2008, prepared by an artist much more skilled than I, see Drum (2010) at p. 43.

accommodated in Figure 2 were tabulated.[11] Clearly, the industry's merger-based structural transformation has been profound.

A related stylized fact has been the increasing concentration of total U.S. financial assets held by the largest institutions. It is shown by Figure 3, drawn without change from page 100 of an excellent book by Henry Kaufman (2009), former managing director of Salomon Brothers. Until the end of the 1980s decade, there was a gradual decrease in the concentration of financial institution asset holdings. After that, a striking upsurge occurred. In 1990, the largest ten financial companies controlled a bit less than 10 percent of total U.S. financial institution assets; by 2004, when Kaufman's series ends, their share exceeded 50 percent. The top 20 institutions controlled 14 percent of assets in 1990, rising to 63 percent in 2004.[12] After 2004 the concentration process undoubtedly continued as the largest institutions absorbed huge financial intermediaries brought into jeopardy by the crisis of 2008.

The third key stylized fact is presented in Figure 4.[13] It shows for 1960 through the third quarter of 2008 profits (before income taxes) reported by U.S. financial corporations as a percentage of total domestic industries' corporate profits. The financial sector's share fluctuated in the range of 8 to 18 percent up to the late 1980s, after which a sharp increase is evident. A decline from the peak of 41.4 percent occurred after 2002, presumably as an advance indicator of the crisis that reached a crescendo in 2008. The profit figures are if anything understated because of the bonuses paid by leading financial houses to their employees, and especially their top managers and traders, which came at the expense of what would otherwise be higher reported profits. It is hard to make an appropriate adjustment. A frequently violated rule of thumb on Wall Street was that 50 percent of pre-tax, pre-bonus profits were paid out as bonuses. Applying the rule literally would raise the trend line in Figure 4 to roughly 1.2 times the values shown. But the rule presumably did not pervade the entire financial industry -- the focus of Figure 4. Bonuses were undoubtedly lower for thousands of local and regional banks, many insurance companies, and the like. What can be said is that the bonus effect cannot have been insubstantial. In 2009, for example, the total compensation of employees at the five largest Wall Street banks alone was $114 billion, or 28 percent of the *total* profits tabulated in Figure 4 for pre-crisis year 2007.[14] End-of-year bonuses alone of banks located in New York City totalled $25.6 billion in peak year

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[11] For another wider-sweeping merger history used as an additional resource underlying Figure 2, see the entry, "List of Bank Mergers in the United States," Wikipedia, February 1, 2010.

[12] At p. 99 Kaufman reports the terminal top 20 share at 70 percent.

[13] It is drawn from the Economic Report of the President (United States, January 2009), Table B-91. An earlier version reports that the financial sector includes depository institutions, nondepository credit institutions, securities and commodity brokers, insurance companies, investment companies, small business investment companies, and real estate investment trusts. Data included in the original source on Federal Reserve bank profits have been excluded from Figure 4. The 2010 Report data are not fully compatible with those in Figure 4.

[14] "Once Banks Hand Out Pay, A Pittance for Shareholders," New York Times, Jan. 27, 2010, Business Section pp. 1 and 8. See also "As Goldman Thrives, Some Say an Ethos Faded," New York Times, Dec. 16, 2009, pp. A1 and A28; "Top Pay List for Bankers: Fresh Names," New York Times, February 11, 2010, pp. A1 and B6; and (on hedge fund managers) "Just a Little Off the Top," New York Times, March 24, 2009, Business Section pp. 1 and 4.

2005, or six percent of total financial institution profits in that year.[15] And there is evidence that the compensation paid to financial industry employees generally -- not just their top executives -- contains substantial "rents" above and beyond what would have been required to call forth the services of equally intelligent, well-trained individuals. A study by Goldin and Katz (2008) of pay received by three generational cohorts of Harvard College graduates showed that, after controlling for SAT scores, undergraduate grade point averages, types of graduate school degrees, gender, and other variables, those who worked for the financial industries received on average compensation 195 percent higher than their peers.

3. A Logical Leap

One trained as I was in the structure - conduct - performance paradigm of the industrial organization specialty might view these stylized facts and reason, "Aha! Concentration of activity in the financial industries has been rising sharply. And so also has profitability. As in a host of prior structure - profit analyses, it would appear that higher concentration has led to higher profits." Indeed, the simple correlation between contiguous portions of the concentration series in Figure 3 and the profit series in Figure 4 is +0.71, with a t-ratio on the concentration coefficient of 6.57.

It is also well known that correlation does not prove causation. Here the warnings of Morry Adelman and George Stigler return to haunt us. The many published structure - profit analyses by industrial organization economists have to my knowledge never implied a causal relationship between *aggregate concentration* -- the phenomenon measured by Figure 3 -- and profitability. Rather, the studies show, and relevant theory supports, a relationship between profits and seller concentration *relative to* narrowly defined economic markets. If any sense is to be made of the observed coincidence, tighter logical links must be supplied.

The major profit spinners on Wall Street have not been the mundane retail banking activities for which Jimmy Stewart won fame in the motion picture, "It's a Wonderful Life," or that my childhood neighbor Ralph Claus practiced as president of the First National Bank of Ottawa, Illinois (still operating as an independent entity!). Rather, the big profits are said to come from investment banking -- e.g., the management of new securities issues on behalf of corporate clients from every sector of the economy, the de novo packaging and issue of new hybrid securities such as collateralized debt obligations or credit default swaps, providing advice to corporations on such matters as mergers and acquisitions, and (perhaps predominantly, according to recent analyses of Goldman Sachs profits) speculative trading in securities, commodities, and foreign exchange on the institution's own account.

Many of these activities are subsumed under the category, "investment banking," as distinguished from more routine commercial banking operations. I learned as a student of finance at the Harvard Business School, and I have not in the past 50 years seen compelling contradictory evidence, that investment banking is a "relationship activity." That is, investment banks build up over the years relationships, both personal and reputational, with their would-be clients, so that, say, a company seeking to float a

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[15] "Wall Street '09 Bonuses Increase 17% to $20 Billion," New York Times, Feb. 24, 2010, p. B7.

new securities issue or merge does not choose from dozens of possible financial intermediaries for support, but from a handful. In more technical terms, investment bank services are not the homogeneous commodity of pure economic theory, but a *differentiated* product -- i.e., what Chamberlin emphasized in his path-breaking 1933 book. As a *Fortune* magazine author observed, "If Ford Motor Company wanted to raise $5 billion in debt from public investors, chances are that it would turn to Goldman Sachs to help it raise the money."[16] If there is truth in this conjecture, investment banking is not in fact a homogeneous blob in which aggregate concentration is behaviorally irrelevant, but instead a set of differentiated sub-markets, in many of which the participants recognize their oligopolistic interdependence.[17] The operating realm of such differentiated industries is called product characteristics space by economists.[18]

Given that investment banking is relational and hence a panoply of possibly tight oligopolies in product characteristics space, it may follow that there is also significant product differentiation in the speculative trading activities that appear to be a mainstay of the major Wall Street institutions' profits. In particular, if Institutions A, B, and C have close links with the real-world companies that produce non-financial goods and services, they are also likely to have superior information on what the near future is likely to hold for those companies. There may also be specialization of focus in financial institutions' knowledge of particular companies and commodities. And given this superior information, the relevant institutions occupy a privileged position to trade profitably in the securities issued or commodities processed by "stuff"-producing companies.

If this is true, increases in aggregate concentration matter economically for the following reason. Widespread mergers and rising aggregate concentration mean that many of the institutions occupying differentiated positions in the product characteristics space of finance have disappeared into the fold of other institutions, leaving tighter oligopolies in any given segment. As Blackstone Group CEO Steve Schwartzman observed, "The changes on Wall Street are immense. There are major players who no longer exist, and the remaining players are making more money because there are fewer competitors and bigger spreads."[19] And unless there is easy entry into the most profitable niches in that space -- something that is far from evident -- tighter oligopoly leads to greater mutual interdependence in pricing and bid-quoting and hence higher profits. Mergers among other things eliminate firms that would otherwise be what Joe S.

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[16] William D. Cohen, "The Man Who Walked Away from Goldman Sachs," Fortune, February 8, 2010, p. 108. Similarly, a former Goldman Sachs executive observed that derivative trading -- said to yield "billions in profit" -- is dominated by five banks. "A Goldman Guy Turns on the Street," Bloomberg Business Week, Feb. 22, 2010, p. 68. And among the top twelve banks, the four leaders provided merger advice in 50 percent of the deals by value acquired. "Mergers and Acquisitions," The Economist, January 2, 2010.

[17] An important anomaly that seems explicable only in oligopolistic interdependence is that the fees charged for new securities offerings in the United States are 7 percent of the issue value, whereas in Europe they fall in the 4 percent range. "High-speed Slide," The Economist, Nov. 14, 2009, p. 86.

[18] On the concept of product characteristics space, see Scherer (1980), pp. 393-398; and the references (especially Kelvin Lancaster, A. Michael Spence, and Richard Schmalensee) cited there.

[19] "Steve Schwartzman Starts Warming Up," Business Week, Nov. 30, 2009, p. 14.

Bain (1956, Chapters 1 and 3) called the "most favored entrants" into relevant differentiated market spaces, increasing, perhaps greatly, the length of time between the emergence of supra-normal profits, through simple oligopolistic interdependence or innovation creating new product niches, and the entry of competitors to dissipate those profits. The result is increased oligopoly power and the higher profits that accompany it.

4. Indirect Evidence

This suggested nexus, I admit, is speculative. I have not worked on Wall Street except in isolated consulting assignments and I am not a financial economics specialist. Given my limitations, I consulted two fellow economists who have spent their careers studying the functioning of financial services markets. What I learned is that we possess a huge amount of systematic empirical evidence on structure - performance relationships in the commercial banking sector, but very little evidence on what happens in investment banking and related financial specialties. We know a lot about commercial banking among other things because the U.S. Federal Reserve Board collects extensive quantitative evidence on the structure of local banking markets, the details of banks' income statements, the interest rates banks pay to their depositors for various kinds of monetary instruments, and the interest rates they charge -- i.e., their prices -- on the local loans they make. This information has been analyzed extensively. On the other hand, there is an information void on the investment banking sector, in part because no federal statistical agency has been a position to perform Justice Brandeis' "sunlight" function[20] and perhaps also because the investment banking beast is so complex that its contours can be mapped and investigated only with the greatest of difficulty.

Lacking direct evidence, I turn for indirect enlightenment to the studies that have been done on commercial banking. In this effort I have been helped by a member of the Federal Reserve Board staff, who provided an extensive list of publications on the structure and performance of banking markets.[21] From that list I selected 16 items, later augmented, whose titles suggested the highest likelihood of shedding empirical light on relevant structure - performance links. The evidence can be divided into three main categories -- effects of structure on pricing, economies of scale and scope, and merger consequences.

Market Structure and Pricing

The evidence that monopolistic or tightly oligopolistic local banking market structures lead to lower interest rates for depositors -- by from 25 to 150 basis points -- appears to be quite consistent.[22] Hannan's analysis (1992) suggests that the strongest structural predictor of lower rates is the market share held by the largest bank in a relevant market. For Italy, however, concentration-increasing mergers were found to

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[20] See Scherer (1990b), pp. 461-487.

[21] My debt to Dean Amel is great, but presumably unrecorded on the Fed's books. I should be happy to provide the complete list to those who request it.

[22] See e.g. Berger and Hannan (1989); Prager and Hannan (1998); Piloff (2009) at pp. 284-287.

reduce consumer rates by about 13 basis points in the short run but to increase them by a similar magnitude several years after the mergers were consummated.[23]

Two studies by Hannan (1991, 1992) also show borrowers paying higher rates in more concentrated local banking markets. Erel (2006) reports lower lending rates following sizeable mergers, but when the mergers significantly increased concentration in locally defined markets, the opposite was true -- borrowers paid higher rates, all else equal. Peterson and Rajan (1995) provide a more nuanced picture. In concentrated banking markets, they find, young (i.e., newly established) borrowers tend to pay *lower* interest rates for their loans. But they infer that the initial low rates are in effect bargains with which banks attract new customers into a relationship, after which they exploit their lock-in power to move the borrowers up to loan terms yielding higher-than-competitive rents. Cohen and Mazzeo (2007) add an additional nuance. Focusing on market structure changes rather than interest rates, they find product differentiation and hence market segmentation among the offerings of conventional banks and thrift institutions. The effect of more local competition in reducing banks' profits tends to be higher when the additional competition involves similar institutions rather than cross-category banks. Thrifts (i.e., savings and loan banks) tend to be insulated from changes in the structure of proximate conventional banking markets, while the elimination of a local commercial bank through acquisition by a multimarket commercial bank reduces competition and (by inference) raises profitability, especially in the farming communities in which local market banks appear to have comparative advantage.

Economies of Scale and Scope

It is well established that the existence of scale or scope economies can confound analyses of the relationship between market structure and profitability, although studies focusing on price effects (like some of those cited above) avoid this complication.[24] Several studies have shed important light on whether larger bank size yields appreciable cost savings or similar advantages.

The consensus of studies focusing on commercial banks is that there are indeed economies of scale, revealed inter alia by lower expense ratios for larger banks. However, the cost savings appear to be realized mainly through increases in bank sizes up to deposit levels of approximately $500 million -- much less than the scale of, say, the largest 100 U.S. financial institutions. Beyond that threshold, cost advantages appear to fade or even reverse, implying an L-shaped or U-shaped long-run average cost function.[25] Citing related research by Federal Reserve Bank staff, Alan Greenspan observed in 2010 that they had been "unable to find economies of scale in banking beyond a modest-sized institution."[26] The only known study (Goldberg, 1991) focusing

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[23] Focarelli and Panetta (2003).

[24] See e.g. Ravenscraft (1983).

[25] See e.g. McAllister and McManus (1993). Piloff (2009, p. 287) suggests that small "benefits of size" might persist out to bank sizes of $10 billion to $25 billion. The 19th largest bank in 2008 had assets of $25 billion and the 47th largest assets of $10 billion.

on securities issuance and trading activities suggests average cost savings up to a threshold of roughly $1 billion in assets.

Two potential exceptions must be recognized. Because they are able to assemble larger and potentially more diversified portfolios of loans and other investments, larger banks might in principle be less risky and hence attract needed capital at lower costs than their smaller compatriots. McAllister and McManus (1993, pp. 398-403) explore this possibility with particular care. They found that capital-raising costs decline more sharply with size than other costs, but only up to a threshold of roughly $500 million of total assets, after which constant returns to scale appear to hold.

This result puzzled me, since one might expect portfolio effects to persist, to be sure more gradually, at even larger scales. In my own study of multi-plant scale economies in twelve important manufacturing industries, I found capital-raising economies to persist out to indefinitely large scales, although for most of the industries they were only slight or moderate in importance relative to total costs.[27] And indeed, persistent capital-raising economies are suggested in a new study by James Kwak (2010). Kwak performs a multiple regression analysis on interest expense as a percentage of average bank earning assets for a large sample of banks and bank holding companies (excluding segregated investing banking operations) for the years 2004 and 2009. He found persistent interest cost savings of 16 to 20 basis points (i.e., 0.16 to 0.20 percent) for each tenfold increase in total bank assets, ceteris paribus.[28] For 2009 but not 2004 he also found a powerful capital cost saving effect for the very largest banks, which he attributed to the government's demonstrated willingness to rescue those "too big to fail" banks in adversity. It is unclear how much of this effect is attributable to paying lower interest on short- and long-term deposits, reflecting possible monopsony power, and how much to pure diversification. That the relationship was at least partly associated with diversification is indicated by his inclusion of a separate variable measuring deposit liabilities as a percentage of total assets. The variable was significantly negative, showing the lower rates paid on deposits relative to longer-term debt.

It is also true from recent history that the largest institutions can allocate disastrously large segments of their investment portfolios to flawed prospects, creating the well-known "too big to fail" problem. On the whole, therefore, the advantages of diversification beyond scales achieved by, say, the largest 50 U.S. financial institutions appear to be either unproved or modest.

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[26] Alan Greenspan, "The Crisis," paper presented at the Brookings Institution March 19, 2010. Mr. Greenspan goes on to note that staff findings led him a decade earlier to state that "megabanks being formed by growth and consolidation are increasingly complex entities that create the potential for unusually large systematic risks."

[27] F. M. Scherer et al. (1975), pp. 284-289 and 394-395. The underlying regression analysis was reported in separate volume, Economies of Scale at the Plant and Multi-Plant Levels, deposited at major research libraries and the Federal Trade Commission library.

[28] In my own similar regression for typically smaller industrial corporations, see note 25 supra, the comparable coefficients implied interest cost savings as a percentage of debt (a narrower measure than Kwak's) of 64 to 107 basis points with a tenfold increase in company assets.

In a particularly comprehensive survey of the relevant literature, Berger et al. (1993) identify a second advantage of large bank scale, highlighted in a study of merger effects by Fixler and Zieschang (1993).[29] They find that scale-increasing mergers appear to have strong positive effects on the output side of the institutions' activities, that is, on their *revenues*, holding cost conditions constant (statistically). It is unclear how this result should be interpreted. It could be seen as a consequence of superior monopoly power associated with greater size relative to particular markets, as we have seen earlier. Or it may mean that larger institutions are better able to enter differentiated but concentrated financial market segments, in which, again, revenue enhancement relative to costs follows from monopoly power. Absent further evidence, I infer that the Fixler and Zieschang result is not inconsistent with the interpretation I have drawn earlier.

Further Merger Effects

Many studies of merger effects yield evidence on cost efficiency similar to what has been reported above.[30] Here some additional findings are summarized.

From case studies of nine mergers selected because they "seemed relatively likely to yield efficiency gains," Rhoades (1998) found that most of the acquiring companies did indeed realize cost reductions consistent with their pre-merger projections.[31] Many of the gains came from eliminating overlapping office functions. The most common reason for failed cost-saving efforts was difficulty integrating electronic data processing functions.

Adams et al. (2009) analyzed the effects of concentration-increasing mergers on post-merger market structure. They found that the more concentrated markets were post-merger, and especially the more mergers per se increased local market concentration, the more new entry there was subsequently into the relevant markets. They interpret this finding as evidence that "market forces might mitigate at least some of the anticompetitive effects associated with high concentration."[32] An extension of their interpretation might be that increases in concentration led to price increases, which in turn attracted new entry, or that service quality deteriorated following merger.[33] This

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[29] The same April 1993 issue of the Journal of Banking and Finance is devoted entirely to studies of financial institution efficiency, with emphasis on scale effects. Many of the Berger et al. observations reinforce the inferences I have drawn in this section.

[30] For a summary, see Amel et al. (2002).

[31] One selection criterion was that the merger partners be of relatively equal size pre-merger. Ravenscraft and I found (1987, Chapter 4) that, in contrast to more general results, mergers of equals had significantly positive profitability effects.

[32] Adams et al. (2009), p. 229. This is consistent with the findings by Dennis Mueller (1985) for non-financial mergers.

[33] An example from personal experience: In one of the many mergers that led my 1990s banker, the Harvard Trust Company, into the arms of the Bank of America, the acquiring bank (probably Bank Boston; see Figure 2) changed its depositors' account numbers. For a research trip to Europe before the merger, I had given my trip sponsors my old account number. When after several months my sizeable expected reimbursement did not materialize, I queried my sponsors and found that the remittance had

explanation is consistent with results obtained by Amel and Liang (1997) for a non-merger context. They found that high profits attracted new entrants, and (especially in rural banking markets) entry in turn reduced profits, though with a substantial time lag. Their inference is that a competitive process is at work in banking markets and that, if the high profits reflected only firm-specific efficiencies, one would not see entry responding to the profit signal.

5. Conclusion

This compressed review of the literature on structure - performance relationships in banking reveals that structure clearly does matter. In particular, higher levels of local market bank concentration lead to lower interest rates for depositors and, with some complex exceptions, higher interest rates for borrowers. There are definite economies of scale and scope in banking, but on most dimensions they are exhausted at relatively low thresholds, below the size of at least the 50 largest U.S. banking institutions. Indeed, the maximum threshold reported in all but the most recent surveyed literature -- roughly $1 billion of assets, which might translate to $2 billion at today's inflated asset values -- is surprisingly low. It is possible that scale economy thresholds in investment banking are higher than in commercial banking -- the focus of most published studies. But on this point, our ignorance is considerable. Capital-raising cost advantages probably persist out to larger scales, although it remains unclear whether investors and depositors might avoid receiving lower interest rates without incurring much more risk by investing in diversified portfolios of smaller banking entities. To the extent that the received wisdom on scale economies carries over, it would appear that well-executed divestitures among the largest banking institutions would cause little in the way of lost economic efficiencies.

For one who has taught antitrust economics on and off for nearly half a century, divestiture is not an unfamiliar specter. But it is also one that is not implemented casually. As the U.S. Supreme Court observed in a 1951 antitrust decision, "[D]ivestiture is a remedy ... not to be used indiscriminately, without regard to the type of violation or whether other effective methods, less harsh, are available.."[34] Here a tradeoff must be recognized. When there is a serious failure of competition, at least in antitrust matters, it can be attacked through conduct remedies or through structural remedies. Conduct remedies have their own limitations. If they are imposed, compliance must be monitored -- something, we recognized vividly when I was on the staff of the Federal Trade Commission, at which Washington bureaucrats are not very adept. Similar problems carry into the monitoring of financial institution conduct, as the massive regulatory failures that led to the crisis of 2008 revealed. The difference between structural remedies -- i.e., divestiture -- and conduct remedies is analogous to the difference in medicine between surgery and continuing drug therapy. With surgery, one hopes, the intervention is painful but brief, after which the patient lives happily ever

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been refused. I then called Customer Service at the acquiring bank, complaining that the new enterprise surely knew that the account numbers had been changed and could have figured out what to do with the remittance. I was told, "We don't anticipate needs for customer service."

[34] Timken Roller Bearing Co. v. U.S., 341 U.S. 593, 603 (1951). See also U.S. v. United Shoe Machinery Corp., 110 F. Supp. 295, 348 (1953).

after. Drug therapy is less dramatic, but must be monitored and adjusted continually. If the government is unable effectively to monitor the conduct of financial enterprises, and if, as even Alan Greenspan admitted after the crisis of 2008, market forces cannot be counted upon to do the job, divestiture may be a last but necessary resort. Since high financial institution concentration resulted from mergers joining what were once separate but mostly viable entities, reversing it may not be as painful as skeptics might urge. And as the studies of commercial banking scale economies suggest, the efficiency losses need not be formidable. Nevertheless, the divestiture alternative was set aside early in the negotiations that led eventually to the so-called Dodd-Frank law passed in 2010, introducing new regulatory frameworks and rules within which U.S. financial institutions must operate.

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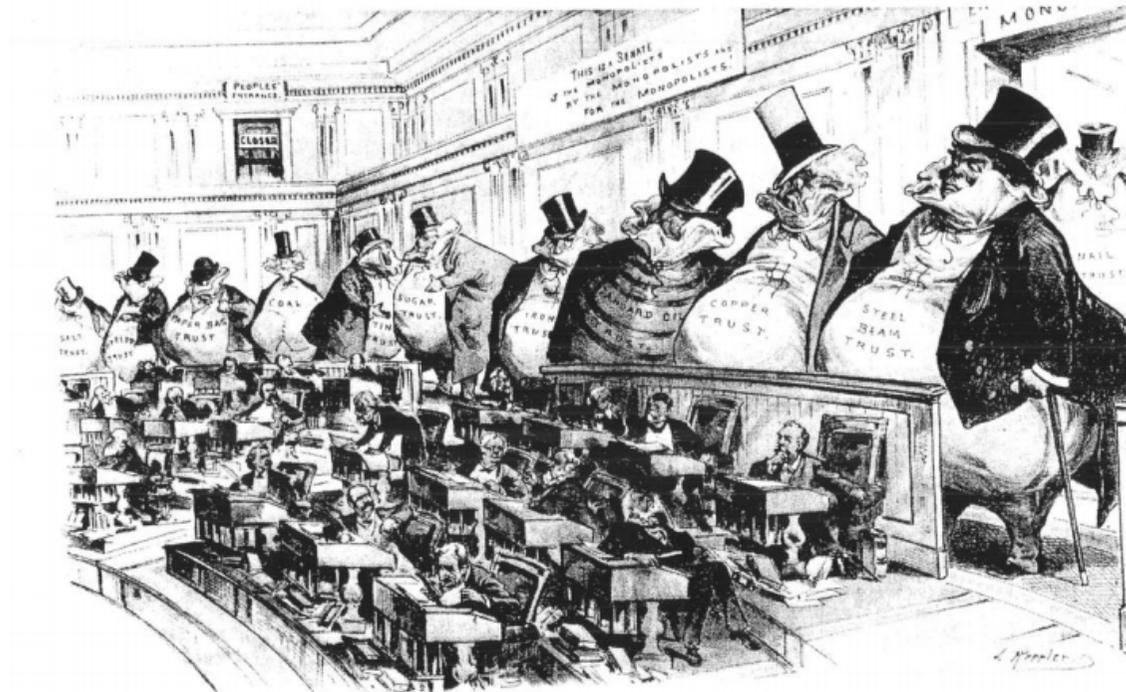
Appendix

Figure 1   "The Bosses of the Senate"
In this 1889 cartoon, Puck, the satirical weekly, captures the essence of public life in the Gilded Age. The sign above the swag-bellies reads "This is a Senate of the Monopolists by the Monopolists!" The "Peoples' Entrance" is "CLOSED."
Joseph Keppler, Puck, January 23, 1889.

Figure 2

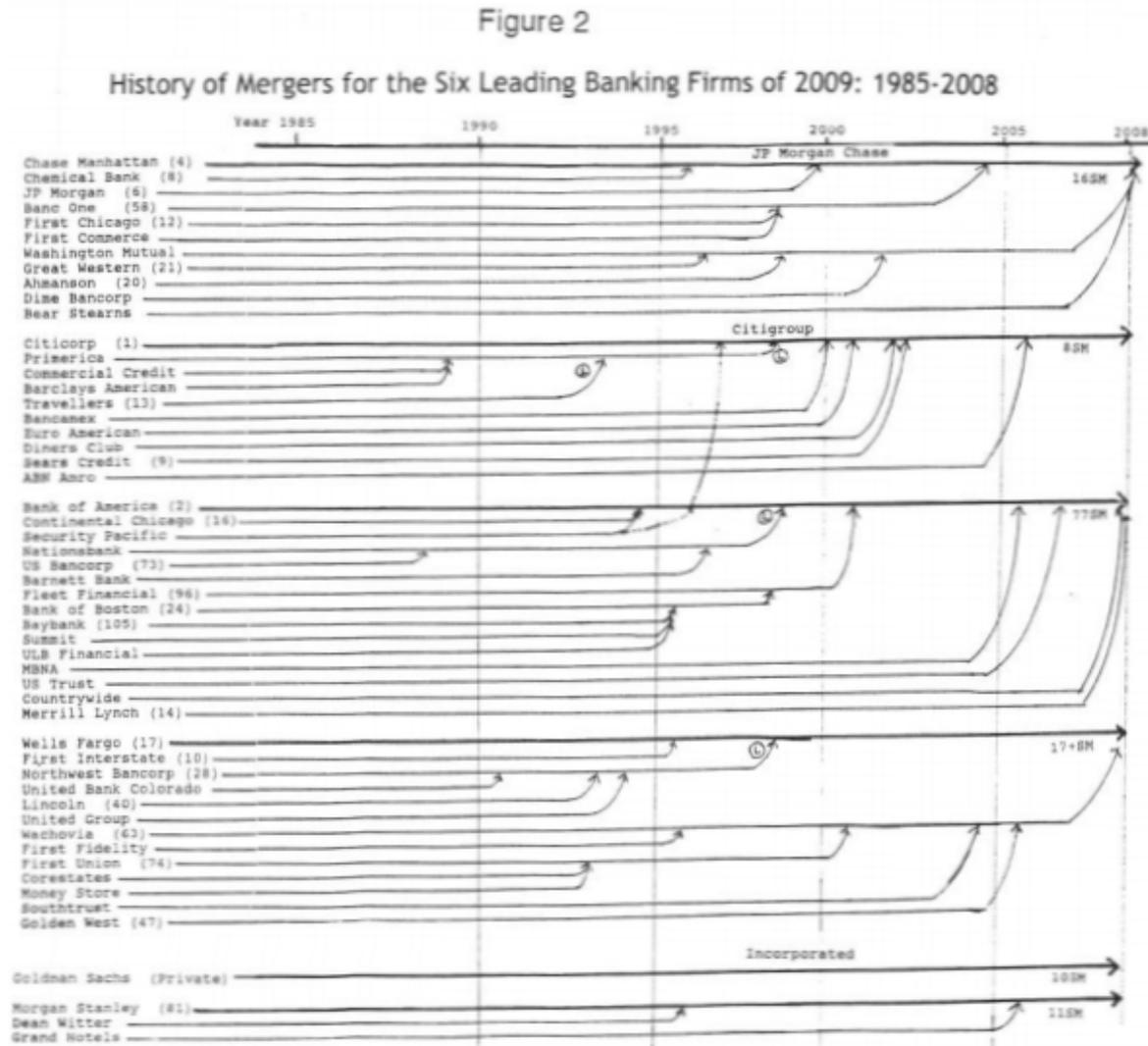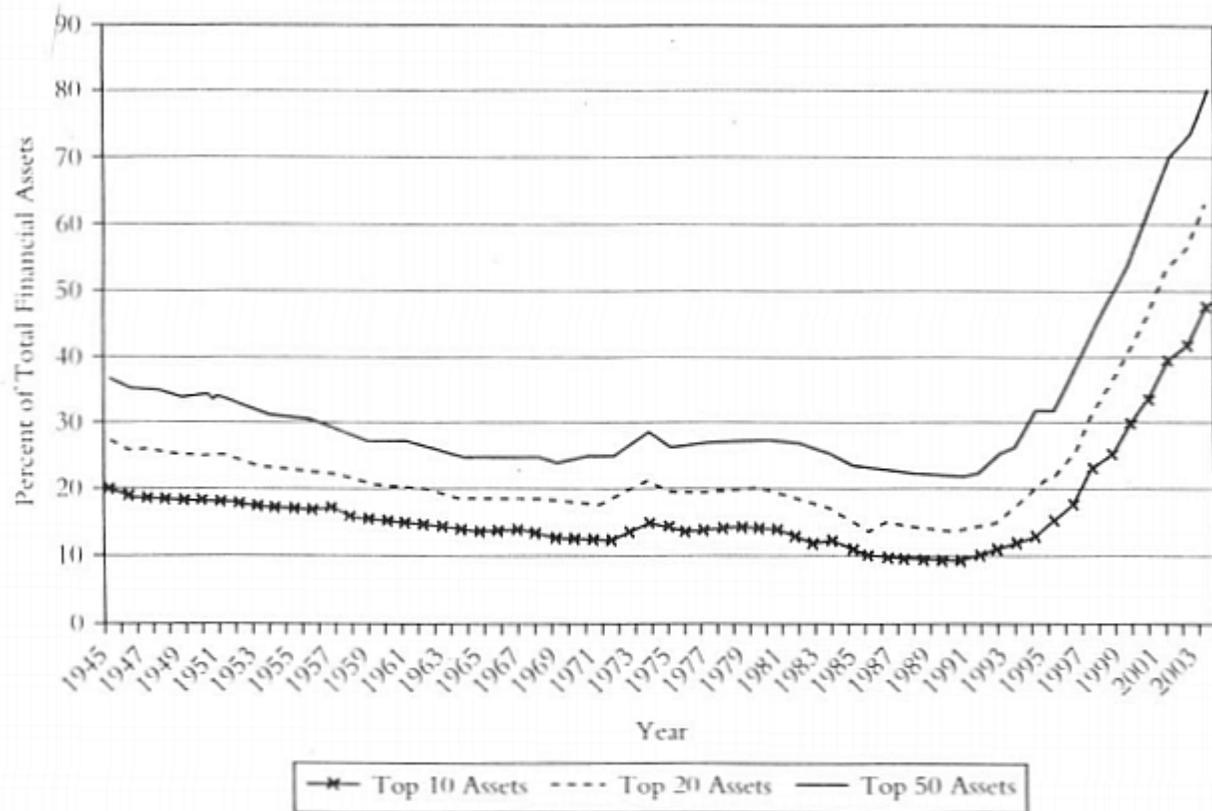### History of Mergers for the Six Leading Banking Firms of 2009: 1985-2008

Figure 3

Top Financial Companies' Share of Total U.S. Financial Assets, 1945–2004

Source: Henry Kaufman, *The Road to Financial Reformation* (2009), p. 100.

Figure 4
Financial Corporation Profits as a Percent of All U.S. Corporate Profits