Investment bank governance

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Abstract

We examine investment bank governance and subject their governance to an array of tests for suboptimal governance. Most of the findings reject the view that the banks are governed suboptimally over a sample period from 1990 through 2003. CEO pay is large and significantly sensitive to stock price performance, which consistently outperforms the market. Bank directors are reputable, independent, and in control of their committees. Bank management is disciplined by pressure from a number of competitive product markets and from a vigorous market for bank control. There is no evidence indicating that unusual governance qualities that may be unique to investment banking are indicative of poor governance performance. The evidence agrees with the view that investment banks choose optimal governance.

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Reformers often seek regulation of corporate governance qualities which they believe encourage suboptimal governance. Examples include barring CEOs from being chairman of the board and curbing directors' outside appointments (Lipton and Lorsch, 1992; MacAvoy and Millstein, 2004). Others counter that if markets regularly pressure management then suboptimality cannot prevail and reform is unwarranted despite the form of the governance qualities (Alchian, 1950; Fama, 1980; Demsetz, 1983; Hart, 1983; Demsetz and Lehn, 1985). Moreover, unwarranted reform can damage the governance structure and firm value (Hermalin and Weisbach, 2006). Unfortunately, this debate has been mired by a scarcity of reliable evidence revealing when and where governance performance is suboptimal. In this paper we provide a new empirical approach that can reveal evidence of suboptimal governance. The approach examines governance of firms in one industry and subjects the governance to a range of tests drawn from the reform and market pressure views. We will apply this approach to the investment banking industry.

The new approach seeks to avoid two key obstacles that have frustrated efforts to assess governance based on past evidence. One obstacle, heterogeneity, is that governance structures differ, perhaps markedly, because firms have dissimilar investment opportunities and product markets (Smith and Watts, 1992). Thus, evidence from the study of governance of firms from assorted industries (e.g., *S&P 500* firms) is likely to be confounded. Focusing on one-industry moderates the heterogeneity issue. The second obstacle, endogeneity, is that most governance qualities are determined simultaneously.[1]

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[1] The various qualities are often jointly determined with leverage, dividend, and investment choices. See Booth and Deli (1996), Yermack (1996), Himmelberg, Hubbard and Palia (1999), Demsetz and Villalonga (2001), Zhou (2001), Bhagat and Black (2002), Ferris, Jagannathan and Pritchard (2004), Lehn, Patro and

Hermalin and Weisbach (2003) conclude that endogenous relationships are too enigmatic to be reliably estimated simultaneously. Thus, without more, it is doubtful that reliable assessments of performance can be gleaned from ad hoc econometric governance models. Our approach features evidence compiled from many tests of governance performance, and not from econometric relationships between governance qualities. Most of the tests avoid the endogeneity concern altogether.

We focus on investment bank governance for a number of reasons. First, investment banking illustrates the effectiveness of the one industry approach. Although the banks are leading financial intermediaries in US and world capital markets, and the foremost financial firms on Wall Street, we are unable to learn about their governance from earlier studies.[2] By contrast, the one industry study reveals bank governance and its performance. Second, the banks were proximate to many scandals in the 1990-2003 sample period, that include legal attacks on high profile bankers, fines levied by the SEC including the notable $1.4 billion fine in the *Global Research Analyst Settlement* (www.sec.gov/spotlight/globalsettelement.htm), and the Department of Justice pursuit of the allegation that the banks conspired to fix underwriting fees in violation of the Sherman Act.[3] Our study will

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Zhao (2004), Fich and Shivdasani (2005), Core, Guay and Rusticus (2005), Brick, Palia and Wang (2005). Larcker and Rusticus (2005) note that the simultaneity problem cannot be resolved with instrumental variables made with accounting data.

[2] While most governance studies exclude financial firms altogether, investment banks are also not found in studies of governance features of some financial firms that include commercial banks (Boyd and Runkle, 1993; Houston and James, 1995; Hubbard and Palia, 1995; Adams and Mehran, 2002, 2003); thrifts (Cole and Mehran, 1998); savings and loans (Hermalin and Wallace, 2001); and funds (Tufano and Sevick, 1997; Del Guercio, Dann and Partch, 2003).

[3] High profile bankers (and their bank) include Mozer (Salomon), Grubman (Citigroup), Quatrone (CSFB), Blodget (Merrill), and Weil (Citigroup). The attack on fee-setting is detailed "U.S. ends probe into underwriting fees charged by securities firms for IPOs," *Wall Street Journal*, April 9, 2001, and Hansen, 2001.

reveal if there was deterioration in bank governance that contributed to the scandals (Healy and Palepu, 2003). Third, this study can aid regulators and practitioners who have openly expressed frustration with the ineffectiveness of prior governance evidence.[4] Lastly, our study can shed light on the extent to which deregulation of commercial bank entry into investment banking (via repeal of the 1933 Glass-Steagall Act) may have affected investment bank governance. Deregulation has impacted governance in other industries (Hubbard and Palia, 1995; Lehn and Kole, 1999). Using hand-collected Proxy Statement data the banks are sorted into the eight majors that are our central interest (Bear Stearns, Donaldson, Lufkin and Jenrette-hereafter DLJ, Goldman Sachs, Lehman Brothers, Merrill Lynch, Morgan Stanley, Paine Webber, and Salomon), and the 20 minor banks. This sort reflects clear differences in investment opportunities (e.g., majors are 150 times bigger than minors, and minors are often under family owner influence).

One set of tests focuses on reform predictions that include governance is suboptimal when the CEO is chairman, or involved with the nominating committee, or has more tenure. Further, when the board is too big, less independent, or directors have too many outside directorships (hereafter, too busy). The tests will detect evidence of suboptimal governance using two performance measures. First is board independence, which is the fraction of unaffiliated directors on the board. While independence may suffer from

[4] SEC Chairman Donaldson concludes "there are no empirical studies that are worth much." See "Independent chairman requested for funds; SEC aims to eliminate conflicts of interest." Carrie Johnson, *The Washington Post*, June 24, 2004. Recent SEC reforms include mandating a majority of mutual fund directors be independent. "SEC faces lawsuit over fund-governance regulations", *Wall Street Journal*, September 2, 2004, and splitting the CEO/chairman at the Stock Exchanges and mutual funds, "SEC toughens governance rules", *Wall Street Journal*, June 24, 2004. See also MacAvoy and Millstein (2004).

measurement concerns and endogeneity bias, we nevertheless report these test results for comparison purposes because in many studies independence is a governance yardstick; a more independent board implies better governance.[5] The second measure is the sensitivity of CEO pay, salary plus bonus, to changes in common stock value. Sensitivity is a reasonable proxy for governance performance because it registers the alignment of CEO incentives and stockholder interest (Jensen and Murphy, 1990). This is particularly so for investment banks where the bonus exceeds 90% of pay, on average. Note that our sensitivity is measured only with respect to salary plus bonus, and not other possible forms of compensation. We suggest that this sensitivity measure has little endogeneity bias as it is largely pre-determined by the governance structure.[6] We hand-collect CEO pay from the Proxy Statements so our pay data does not suffer from missing values. By contrast, as much as 60% of compensation data is missing for some banks in machine readable data sources like *ExecuComp*.

The reform tests reveal that boards are more independent when the CEO is chairman, involved with the nominating committee, and has more tenure. Moreover, busier boards are more independent. Consistent with alignment of CEO incentives with shareholder

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[5] See Booth and Deli (1995), Yermack (1996), Shivdasani and Yermack (1997), Hermalin and Weisbach (1998), Bhagat and Black (2002), Ferris, Jagannathan, and Pritchard (2004), Lehn, Patro, and Zhao (2004), Fich and Shivdasani (2005).

[6] Studies view sensitivity of CEO stock ownership and option grants as an endogenous determinant of governance traits, but not salary plus bonus sensitivity, agreeing with the view that governance structure pre-determines future pay plus bonus sensitivity. See Demsetz (1983), Demsetz and Lehn (1985), Cho (1998), Cole and Mehran (1998), Core and Guay (1999), Core, Holthausen and Larcker (1999), Denis and Sarin (1999), Himmelberg, Hubbard and Palia (1999), Brenner, Sundaram, and Yermack, (2000), Ofek and Yermack (2000), Demsetz and Villalonga (2001), Fenn and Liang (2001), Palia (2002), Brick, Palia, and Wang (2005), Hubbard and Palia (1995).

interest, bank CEO pay-sensitivity is significantly positive. The sensitivity is not lower when the CEO is chairman, or has more tenure, or sits on the nominating committee. Moreover, it is not lower when boards are large, less independent, or busier. These independence and pay-sensitivity findings are confirmed for major and minor banks. Together, they are in agreement and they reject all of the reform view predictions of suboptimal governance. Thus, these findings agree with the view that while bank governance qualities may differ from norms found in other industries, the differences are not indications of suboptimal governance.

The second set of tests focus on four predictions related to the market pressure view. First, suboptimal governance cannot prevail if management is under enduring product market pressure. Second, suboptimal governance cannot prevail if management is under persistent control market pressure. A third prediction, that CEOs under external pressure do not have power over their pay sensitivity, draws from Bebchuck and Fried (2004). It is included with the market pressure tests because such power presumes inadequate pressure on management. For similar reasons, the fourth prediction is that bank governance deteriorated in the scandal period. The results show that bank managers were disciplined by competition in five product markets, where entry was easy. For example, the five major banks that survive the sample period held or grew their share in most of the product markets, often in the face of vigorous entry. Managers were also disciplined by sustained pressure from the control market, as over 50% of the investment banks were taken over in the sample period. No evidence is found of CEO power over their pay. No evidence is found of deterioration in bank governance performance in the scandal period. These results are confirmed for major and minor banks. They agree with the findings from the reform

prediction tests that failed to uncover evidence of suboptimal governance. The evidence agrees with the view that banks choose optimal governance. While it may also agree with the irrelevance of governance mechanisms, a more reasonable view is that the banks expend many resources in order to choose their governance mechanisms optimally.

We offer a reasonable interpretation of the findings. They broadly agree with the notion that bank management has been exposed to persistent pressure from competitive product markets where entry has been easy and the banks continually compete for reputation. The banks have also been under persistent pressure from an active market for bank control. Under the market pressure view these pressures have likely precluded the development of suboptimal governance. In agreement, no evidence is found indicating that bank governance qualities, despite their possible differences with other industries, have contributed to suboptimal governance. The quality differences appear instead to reflect a further specialization and division of labor in bank governance, in response to complex investment opportunities and the competitive external pressures on the banks, which continually expose them to much quicker market tests than in typical operating companies. The CEOs appear to be talented, focused on bank management, and empowered with flexibility over top-level decision-making. They are frequently the chairman of the board, have few committee assignments or outside directorships, and are contractually incented to improve stockholders' wealth, which our abnormal stock return evidence supports. Directors are empowered to counterbalance the powerful CEOs. They sit on larger than normal boards and have significantly more outside directorships than normal. Based on their outside appointments, they are much more reputable than directors of the typical

operating firm. They maintain independent boards, control their committees, and focus the CEO with incentive pay to improve shareholder wealth.

We also note that the study of governance within one industry has its limitations. First, generalizations about the broad state of corporate governance cannot be made based on findings from one industry. This limitation can be eased with more industry studies of governance. Note, however, that studies of other industries may require performance measures other than CEO pay sensitivity. Second, heterogeneity may need to be further confined within the industry. For example, the investment banks are partitioned into two obviously different groups. Third, one-industry studies will have small samples. This limitation is best addressed using small sample statistics. To instead expand sample size by pooling across industries will likely mask evidence that is uniquely revealed by the one industry approach. Fourth, as we have noted, it is not in the design of the industry approach to provide evidence on simultaneous relationships among governance qualities.

The remainder of the paper proceeds as follows. Section I previews the governance hypotheses. Section II reports bank governance traits. Section III reports the independence test results. Section IV reports the pay-sensitivity evidence. Section VI assesses the market pressure hypotheses. The paper concludes with section VII.

I. Governance performance predictions

Here we discuss tests base on predictions from reform and market pressure hypotheses.

I.1. Reform hypotheses

We consider CEO reform predictions and board reform predictions.

I.1.1. CEO reform hypotheses

We test six CEO reform predictions.

CEO dual: Governance is suboptimal when the CEO is also chairman of the board

Activists want the CEO and chairman positions split.[7] MacAvoy and Millstein (2004) want the split required by law to allow a separate chairman to provide directors with information. Allen and Berkley (2003) note three costs of splitting; the CEO has to share power with someone who is less informed and overly risk averse; a complex relationship is introduced into corporate governance and operations that will cause costly diversion from firm operations; and the corporation's commitment to the unitary board will weaken, reducing the status of other directors. A majority of U.S. firms (over 75%) prefer the CEO/chair (Vancil, 1987; Booth and Deli, 1996). Barclay, Coles, and Jarrell (1997) find a split is detrimental to shareholder wealth.

CEO involvement: CEO involvement with the nominating committee contributes to suboptimal governance

Practitioners and activists say involvement gives power over director selection (Mace, 1986; Vancil, 1987). Shivdasani and Yermack (1999) find that CEO involvement coincides with less independence of the board.

CEO tenure: Longer CEO tenure contributes to suboptimal governance

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[7] See National Association of Corporate Directors "Recommendations from the National Association of Corporate Directors" 2002 (www.nacdonline.org/nacd/enron_recommendations.asp), and The Conference Board, "Commission on Public Trust and Private Enterprise" 2003, www.conferenceboard.org/knowledge/governcommission.cfm.

Authors have suggested that greater tenure expands the CEO's opportunity to accrue power (Hermalin and Weisbach, 1998), thereby contributing to suboptimal governance.

CEO interlocks: Governance is suboptimal when the CEO is interlocked

An interlock occurs when two CEOs sit on each other's board, thus contributing to suboptimal governance. Vancil (1988) and Fich (2003) report CEO interlocks are commonplace in large US operating firms.

I.1.2. Board reform hypotheses

We test three board reform predictions.[8]

Board size: Governance is suboptimal when boards are larger

Practitioners and economists argue that smaller boards permit more expression by each director and cut free-riding, improving monitoring (Vancil, 1983; Lipton and Lorsch, 1992; Jensen, 1993). Smith and Watts (1992) suggest that bigger firms need bigger boards to obtain more knowledge. Authors show that smaller board size is associated with better performance (Yermack, 1996; Eisenberg, Sundgren, and Wells, 1998), and others show that bigger firms have bigger boards (Lehn, Patro, and Zhao, 2004).

Board dependence: Dependent boards contribute to suboptimal governance

Board independence is the fraction of directors who were never full-time bank

[8] The board's main functions include advising management, monitoring the CEO, and gathering information. See Williamson (1975); Fama and Jensen (1983); Vancil (1987); Fama (1980); Hermalin and Weisbach (1998); Monks and Minow (2001); and Krosner and Strahan (2001).

employees and have no family or business tie with the bank. Activists assert that credible monitoring requires a supermajority of independent directors. However, the academic evidence is split. Yermack (1996) finds a positive relationship between independence and firm value. Bhagat and Black (2002) uncover no evidence of a relationship.

Board busyness: Governance is suboptimal when boards are busier

Busyness is the number of outside director appointments. Reformers argue that limiting appointments to two, and sometimes three, assures effective CEO monitoring (Lipton and Lorsch, 1992). Economists claim more appointments signal higher director quality (Fama and Jensen, 1983; Gilson, 1990; Kaplan and Reishus, 1990), and improve business opportunities (Booth and Deli, 1996). However, the evidence is at odds. However, the evidence is at odds. Ferris, Jagannathan, and Pritchard (2004) find multiple appointments do not align with weaker performance. Fich and Shivdasani (2005) find they do.

I.2. Market pressure hypotheses

The central tenet of the market pressure view is that if management is exposed to persistent product market discipline, then in order to survive they must halt suboptimal governance behavior or face extinction through bankruptcy or takeover (e.g., Alchian, 1950; Fama, 1980; Demsetz, 1983; Hart, 1983; Demsetz and Lehn, 1985; Smith and Watts, 1992). This suggests suboptimal governance survives only in the absence of such pressure.

We consider two primary market pressure predictions,

Product market pressure: Investment banks face weak product market pressure

Control market pressure: Investment banks face weak control market pressure

In addition to gauging the extent of competition in several product markets, we also examine the impact of commercial bank entry into investment banking activities spawned by repeal of the Glass-Steagall Act. If the effect of the repeal is to intensify competition, or to reduce or eliminate a prior lack of competition, then the repeal should cause a significant decline in bank product market shares.[9]

CEO power-pay: Powerful CEOs have lower pay sensitivity

This prediction draws from the Bebchuck and Fried (2004) power-pay thesis, "executives who have more power vis-à-vis their boards should receive pay that is less sensitive to performance-than their less powerful counterparts" (p. 5). This is included as a market force hypotheses because adequate external pressure is likely to curb such power.

Finally we test a prediction of the scandal hypothesis,

Bank scandal: Governance performance falls in last half of the sample period

The banks were associated with a number of scandals; legal attacks on high profile bankers, SEC and NASD fines, and the $1.4 billion fine on the top ten banks in the *Global Research Analyst Settlement*., all of which occure3d in the latter half of the sample period.

II. Inside the banks: Boards and CEOs

This section describes the sample of bank board and CEO statistics and reports analyses of governance qualities.

II.1. The sample

[9] Evidence of competition in investment banking is also reported by Gande, Puri, and Saunders (1999),

We focus primarily on publicly traded banks during 1990-2003, having CRSP Standard Industrial Classification of 6211, for which annual proxy statements could be found.[10] Recent proxy statements are from SEC Edgar (www.sec.gov/edgar.shtml), and earlier statements are gathered from private collections. All data from the proxy statements are assembled by hand. Institutional ownership is from Disclosure/Spectrum Institutional 13F Common Stock Holdings and Transactions (hereafter Disclosure). Disclosure reports quarterly holdings of common stock as reported by institutions with $100 million under management on their 13F filings with the SEC. Financial statement data are from Compustat. Returns are from CRSP. Proceeds underwritten and acquisition size are identified from Securities Data Corporation. For much of the analysis the banks are sorted into the eight largest major banks and the remaining 20 minor banks. The panel data is unbalanced as three major banks join the sample after 1990 (DLJ and Goldman Sachs went public respectively in 1995 and 1999, and Lehman Brothers was spun-off by American Express in 1994), and three major banks exit the sample before 2003 (Citigroup acquires Salomon in 1997, Credit Suisse First Boston, hereafter CSFB, acquires DLJ in 2000, and UBS Americas acquires Paine Webber in 2000). Three minor banks also enter the sample after 1990 and 13 are acquired or go private by 2003. To address concern with bias due to short listing periods (four years for Goldman Sachs, six years for DLJ, and eight years for Salomon), relevant statistics are also reported for the five lasting major banks that are publicly traded for at least ten years (14 years for Morgan Stanley, Merrill Lynch, and

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Hansen (2001), and Corwin and Schultz (2005).

Bear Stearns, 11 years for Paine Webber, and 10 years for Lehman Brothers). In effect, our sample is the entire population of publicly traded banks over the sample period.

Table 1 lists the sample of 28 banks ranked by latest total assets, expressed in constant 2003 dollars. Also reported are each bank's share of all transactions in five product markets; the underwriting markets for unseasoned stock, seasoned common stock, and bonds, and M&A advising markets for bidder and target firms. While the sample excludes commercial and universal banks that underwrite security offerings (prominently absent are Citigroup, CSFB, Chase Manhattan, and JP Morgan), sample banks account for the bulk of the market shares; over 70% of the equity markets, over 65% of the bond market, and over 50% of the acquisition advisor market.

II.2. Governance profile

Table 2 reports bank statistics. Panel A shows that major bank mean size is $197.4 billion in assets, which grew 14.3% annually over the sample period. In comparison, minor banks have average assets of $1.5 billion that grew at 13.5% annually. The high growth coupled with the stretch of many financial activities across the globe, including underwriting, mergers and acquisitions, trading, and investing, shows the banks are complex organizations. Bank capital structure reveals a preference for financing at the low risk end of the Myers and Majluf (1984) pecking order. The banks eschew financing growth with new common stock, as none have raised external equity through a public

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[10] The period is the first time most investment banks are public, as Morgan Stanley went public in 1988, and DLJ, Lehman Brothers, and Goldman Sachs all went public in the 1990s (see also Morrison and Wilhelm, 2004).

stock offering after going public, relying instead on earnings and borrowing, with major banks relying significantly more on long term debt than minor banks. The banks pay non-trivial dividends.

Major bank CEOs are older than minor bank CEOs, and they own small fractions of their bank's common stock, 1.2%, while minor bank CEOs own 8.5% (Panel B). Although this could suggest that major bank CEOs have less ownership interest, they have $127 million (median $114 million) invested in their bank, while minor bank CEOs have $15 million (median $8 million) invested. It is thus the case that bank CEOs have considerable personal wealth tied up in their banks.

Major bank median board size is 11 directors. The mean of 12.7 directors is skewed upward by Bear Stearns experimentation over 1990-1997, with large boards that peaked at 33 directors, before falling back to ten. We thus report in parentheses in Panel C board statistics that exclude Bear Stearns. Other major bank average board size is 10.7 directors with a median of 11. Their boards are larger than typical boards of operating firms (Ferris, et al, 2004; Lehn, et al, 2004). Board independence (hereafter independence) at the major banks, measured by the fraction of independent directors, is just above 50% over the sample period, below the average reported by Ferris, et al. (2004). Directors of major banks average almost three outside appointments which is large relative to non-financial firms. Relative to the major banks, minor bank boards are smaller, averaging 8.2 directors. They are less independent and their directors have fewer outside appointments.

Blockholders and institutions own significant fractions of major bank shares which partly reflect large consolidations of common stock ownership in the early years after some of the banks went public. Mikkelson, Partch, and Shah (1997) show that ownership

concentration tends to be high when operating firms go public and falling thereafter. Mean outside ownership is more heavily weighted on banks with more sample years. Cross section means of each bank's average annual insider, blockholder, and institutional holdings that weight each bank once, display a similar ownership profile (not reported). Some institutional holdings overlap with the 5% blockholder holdings.

II.3. CEO power

We consider five indicators of CEO power that may reflect suboptimal governance; CEO compensation and four indicators of control over the board.[11] CEOs' average annual compensation, measured as salary plus bonus in constant 2003 dollars, is significantly larger than minor bank CEO compensation, averaging $7.2 million versus $1.2 million (with respective medians of $6.4 million and $740 thousand). The differential is consistent with the notion that CEO compensation within the same industry is larger at larger and more complex firms (Smith and Watts, 1992).[12] Annual compensation of CEOs is shown

[11] As might be expected in an industry study, there is too little frequency of CEO turnover to assess if outside bank directors are associated with increased CEO turnover, as documented in assorted industry samples of operating companies by Weisbach (1988). Investment bank CEOs usually come from within their bank and stay on the board after stepping down. A smooth succession not unlike the "baton passing" pattern described by Vancil (1987) is typical. The appointment of Morgan Stanley CEO Purcell and Salomon's turnover are the only two cases of outsider succession (Denham replaced Warren Buffet, who for a year had replaced Gutfriend). Gutfriend is the most obvious, if not only, example of forced departure, precipitated by a bond trading scandal. Outside succession occurred at minor bank Stifle in 1998. Minor banks First Albany over 1990-1993 and Paulson over 1992-2003 had no CEO and two experimented with co-CEOs; Advest in 1991-1992 and First Albany from 1998 through 2003. CEOs are founders at minor banks Legg-Mason, Morgan Keegan, Paulson, Piper-Jaffray, and Raymond James. For discussion of factors associated with CEO turnover and succession in non-financial firms see Weisbach (1988), Denis and Denis (1995) and Parrino (1997).

[12] To avoid biasing the compensation downwards, we hold Salomon out of the major compensation statistics to allay concerns with bias due to unusually low compensation paid to Gutfreund's replacements. Gutfreund's nominal salary plus bonus is $3.5 million in 1990 and $2.3 million in 1991. During his follow-

in Panel A of Figure 1, where a rising saw-toothed trend is apparent. However, there are large swings in the compensation, particularly for major bank CEOs, which correspond to swings in bank common stock performance. The magnitude of major bank CEO compensation is comparable to compensation paid at other comparable major non-financial companies over the sample period (Murphy, 1999).

A second possible source of too much CEO power is dual appointment to chairman. CEO/chair occurs 71% of the time at major banks and 61% at minor banks, compared to 75% for other firms, a trend that is rising (Figure 1 Panel B). A third route by which the CEO may gain control over the board is through involvement with the board's committees. Bank CEOs virtually never sit on the audit or compensation committee (major banks CEOs sit 6% and 0% respectively in the first half of the sample period; 0%, and 0% in the second half; and minor bank CEOs sit 15% and 51% in the first half; and 2% and 9% in the second half). Panel C of Figure 1 shows that while CEOs have sat on the nominating committee in earlier years, that pattern disappears in 2002 and 2003. CEOs may accrete power through lengthy tenure. Major bank CEO tenure averages four years, and minor bank CEO tenure is five years (Panel B, Table 2). In contrast, average tenure at operating firms is 6.3 (Denis and Sarin, 1999). The interlocks hypothesis predicts that CEOs increase their power through reciprocal interlocks with CEOs of other firms. However, among the major banks there are only two reciprocally interlocked CEOs in four of the sample

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on one-year CEO stint, Buffet received no salary or bonus. CEO Denham then followed with compensation of $1 million and $1.325 million in 1993 and 1994, then exactly $1 million each year thereafter until Citigroup's 1998 acquisition of Salomon.

years.[13] These findings suggest that reciprocal CEO interlocks are not a significant factor in bank governance.

II.4. Board performance

Governance studies typically focus on four indicators of board performance: size (i.e., the number of directors), independence, number of outside appointments per director, and appointment quality. Panel A of Figure 2 reveals that major bank board size is relatively stable over the sample period, once adjusted for Bear Stearns' large experimental board. The smaller minor bank board size changes little over the sample period. Over the sample period, major and minor banks increased appointed directors by roughly one, reducing not-appointed directors by four, on average (Panel A Table 4). Panel B of Figure 2 shows that independence rises throughout the sample period. The particularly significant rise at the major banks is partly aided by the sharp 1998 increases at Bear Stearns, reflecting their board downsizing, and at Morgan Stanley, which replaced four inside directors with ten new directors that include eight outsiders. Nevertheless, independence rises at every major bank over the sample period and in every year it exceeds 50% at the five lasting major banks (not shown).

Outside appointments at major banks climb by almost four on average (Panel B, Table 4). By the end of the sample period 80% of their directors and 67% of minor bank directors are appointed. A typical major bank outside director holds over three appointments (results

[13] In 1997, DLJ's CEO Roby was a director at Advanced Micro Devises whose CEO Sanders was a DLJ director. In 1991, 1992, and 1993 Merrill Lynch & Co. CEO Schreyer was a director at Schering Plough, who's Chairman Luciano was a Merrill Lynch director.

are similar with Bear Stearns), and a typical minor bank director holds nearly two appointments (Panel C of Figure 2). In addition, appointment quality increased as major bank appointments to S&P large cap, mid cap, and small cap firms (the 500, 400, and 600 respectively) rises by three in the second half, or almost 50%. Minor banks picked up one additional high quality appointment.[14] These results indicate that the quality of bank directors rises over the sample period.[15]

III. Independence tests

Unusual characteristics among bank governance structures could be indicators of suboptimal governance. Alternately, they may reflect division and specialization of labor between the inputs in an optimal structure. To shed some light on this issue, we first report results of nonparametric tests of the governance reform hypotheses following the tests introduced by Booth and Deli (1996). The test gauges if a particular governance characteristic is associated with more or less board independence, which is often viewed as a proxy for governance quality (see Hermalin and Weisbach, 1998, among others). We report these tests for comparison purposes, and acknowledge that they could be biased due to endogeneity of independence. We also acknowledge that this traditional measure of

[14] To check robustness of this director quality test we examined the frequency with which bank officers and directors are appointed to firms in the top three deciles of CRSP firms, sorted annually on the basis of market value of equity. This test yields qualitatively similar results (not reported).

[15] High director quality is also indicated by prior high-level experience with the Executive Branch of the federal government at some major banks. Notable examples include former President Ford (Salomon), former Secretary of State William Rogers (Merrill Lynch), former Secretary of Defense (and subsequently Vice-President) Dick Cheney (Morgan Stanley), former Chairman of the Joint Chiefs of Staff William Crowe (Merrill Lynch), former member Education Policy Advisory Committee John Akers (Lehman Brothers), former Director of the Office of Management and Budget Joseph Wright (Salomon), former

independence is unable to reveal the extent to which each director is actually objective, assertive, and independent.

Consider first the CEO reform hypotheses. One indicator of power over the board is creeping reduction of independence through persistent CEO pressure over time. Comparing the first and last year of the CEO's tenure, Panel A of Table 4 shows that independence rises a statistically significant 9.3% over the 11 CEO terms (*p-value = 0.00*) at major banks and by 12.7% at the minor banks (*p-value = 0.01*). A second source of power is for the CEO to be chairman. However, Panel B of Table 4 shows that both mean and median independence is statistically significantly greater at major banks whose CEO is the chairman. At the minor banks independence is the same regardless whether the CEO is the chairman. A third route to power is for the CEO to gain control over the board by involvement with the board's committees. Testing the involvement hypothesis reveals that independence is significantly higher when the CEO is a member of the nominating committee (Panel C of Table 4). These results contradict the conclusion that at the banks, CEO power from tenure, holding the chairman position, or from nominating committee involvement, is associated with suboptimal governance.

Consider next the big board hypothesis, bigger boards cause suboptimal governance. This predicts that independence should be less for bigger boards. The findings in Panel D of Table 4 contradict this hypothesis. Consider next the board busyness hypothesis. If busyness is detrimental to governance then independence will be less at banks with busier directors. However, Panel E of Table 4 shows that major bank boards with above median

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Secretary of Treasury Robert Rubin (at Goldman Sachs before being Secretary), and former Chair of the Council of Economic Advisors Laura Tyson (Morgan Stanley).

outside appointments are significantly more independent on average (58.5%) than the banks with less busy boards (45%). This is confirmed with median independence. These results imply that bank board busyness is not associated with suboptimal governance. They are opposite of the Fich and Shivdasani (2004) finding of a negative relationship. Ferris et al., (2004) report no significant relationship.

IV. CEO pay-sensitivity tests

This section reports results of tests of test several reform hypotheses and the power-pay hypothesis.

IV.1. CEO incentive alignment

While there is no obvious evidence of suboptimal governance in the board and CEO performance data, interpretations of the nonparametric tests can be problematic due to the endogeneity concern. This section reports further results from tests of performance in which endogeneity is a secondary concern.

Murphy (1999) and Jensen and Murphy (1990) suggest that an important indicator of CEOs' incentive alignment is the sensitivity of their pay to their firm's stock price performance. Consistent with this, major bank proxy statements clearly state that the compensation committee members' goal is to align the CEO's financial interests with those of stockholders. Invariably, the CEO's annual compensation is a relatively modest salary that is flat over time, plus a variable and potentially large bonus that is contingent on the bank's fiscal year stock price performance and operating performance (to include expense control, net revenues, return on equity, profit margins, market share gains,

strategic planning, and bank reputation), plus other stock-based awards that are contingent on future long-term stock price performance and cemented through vesting requirements. For example, the 2003 base salary for Merrill's CEO is $600,000. In determining the compensation structure the committees rely on comparisons with CEO compensation packages at the other major banks in this study and at the largest corporations in the US, as well as third party advisors.

We first test if the CEO pay is aligned with stockholder interest in the pay period after the completion of the CEO's compensation contract. CEO compensation (salary plus bonus) is regressed on equity value added, which is the change in capitalization (i.e., the rate of return on common stock during the pay period, times the market value of equity at the beginning of the pay period, which is the fiscal year ending just before the proxy statement date, Murphy, 1999). We expect assets at the beginning of the pay period to have a positive impact on compensation, reflecting the relationship between compensation and organizational complexity. To address the concern with model misspecification that is associated with omitted variables, estimation of each model includes bank-specific dummy variables, one for each bank to allow a different intercept for each. Throughout, the coefficients of these fixed-effects variables are not reported.

The results of the sensitivity tests are reported in Table 5. For the major and minor banks value added has a highly statistically significant positive impact on CEO pay. The estimates show that compensation is significantly positively related to total assets, agreeing with the view that compensation rises with organizational complexity. Consistent with earlier studies the sensitivity is smaller for the larger major banks (Murphy, 1999).

IV.2. Reform hypothesis evidence

We conduct additional tests of the reform hypotheses by examining the impact of the governance traits on CEO pay and its sensitivity. The reform hypotheses predict that pay should be significantly larger and more sensitive as the governance trait worsens. The results are reported in Table 6.

We first test the CEO dual hypothesis, augmenting the compensation model with a dummy variable equal to one if the CEO and chairman are separated, and the product of that dummy variable with value added. The estimates for major banks are reported in Column 1. The coefficient for the CEO alone intercept is statistically insignificant. The coefficient for the product of CEO alone and value added is also statistically insignificant. To test the CEO involvement hypothesis in a similar fashion, a dummy variable is used that equals one for the involved CEOs. The involvement hypothesis predicts a positive intercept dummy and a negative impact on sensitivity. While the signs of the intercept and sensitivity change coefficient estimates reported in Column 2 agree with the involvement hypothesis prediction, neither coefficient is statistically significant. To test the board dependence hypothesis, we augment the compensation model with a dummy variable equal to one if independence is below the median level, and the product of that dummy variable with value added. If less independence indicates suboptimal governance then it should have a positive impact on CEO compensation and dull the sensitivity. Estimates in Column 3 show that dependence has no significant impact on compensation or its sensitivity to value added, contrary to the dependence hypothesis. Column 2 reports tests of the busy board hypothesis after the compensation model is augmented with a dummy variable equal

to one if board busyness is above the median level and the interaction of board busyness with value added. The busyness hypothesis predicts busyness will have a positive impact on CEO compensation and dull the pay-sensitivity. The estimates in Column 4 show that busyness has no significant impact on compensation or pay-sensitivity.

Each of the above tests is also performed on the minor banks and the results are reported respectively in Columns 5 through 8. These results confirm the findings for major banks, rejecting all reform hypotheses.

V. The market pressure hypotheses

This section examines additional independent tests for suboptimal governance by appealing to the survivorship principal that predicts good governance must prevail when the firm is exposed to sufficient persistent competition in its product markets or to a vigorous market for corporate control.

V.1. Product market competition

To assess whether there is sufficient product market discipline on bank governance we consider the five relevant product markets identified in Table 1; the three underwriting markets for corporate security offerings; unseasoned equity, seasoned equity, and bonds, and the two M&A advising markets for bidding and target firms.

One indicator of competition is low product market concentration, particularly over a span of years (see Stigler, 1968; Scherer and Ross, 1990). Concentration is measured by the Herfindahl index in two ways. The value weighted index measures market share based on the dollar amount; in the primary markets the share of total annual proceeds

underwritten by the bank as lead underwriter (or the pro-rata share as co-lead underwriter); and in the acquisition advisor markets the share of annual value of acquisitions (or the pro-rata share when co-advisor). The equally weighted index measures the banks' share of the number of deals. Equally weighted share addresses the concern that unusually large deals will have a disproportionate effect on a bank's market share. We exclude offerings by financial firms (SIC in 6000s) and very small deals ($5 million or less). An index level of 1,000 or less is indicative of an "unconcentrated" market (see the Department of Justice, §1.5, in Merger Enforcement Information, Horizontal Merger Guidelines, www.usdoj.gov/atr/pubdocs.html).

Table 7 reports annual product market concentration. While value-weighted concentration in unseasoned offerings climbs just above 1000 in 2001-2003, the long-term average is significantly under 1000. A sharp reduction in the number of offerings contributes to 2001-2003 climb above 1000 allowing a few large offerings to boost the Herfindahl Index.[16] The equally weighted index shows an absence of concentration over the sample period. These results agree with a high degree of competition in unseasoned equity offerings. The market for seasoned equity offerings is also highly competitive, as average concentration is statistically significantly below 1000. The corporate bond market is above the unconcentrated level in a number of years using the value weighted Index, but is below 1000 in most years using the equal weighted Index. There is significant evidence

[16] Proceeds for the extra large offerings in millions (and the co-lead banks) are: 2001, Weight Watchers Intl. Inc. $412 (CSFB and Goldman Sachs); Aramark Worldwide Corp. $690 (JP Morgan and Goldman Sachs); and United Defense Industries Inc. $401 (Lehman Brothers and Goldman Sachs). In 2002 Carolina Group, $980 (Morgan Stanley and Citigroup); Premcor Inc. $432 (Morgan Stanley and CSFB); and Seagate Technology LLC $870 (Morgan Stanley and Citigroup).

of competition between the banks in both of the acquisition advisor markets, where average concentration is significantly below the unconcentrated level.

V.2. Product market entry

Competitive pressure is also reflected by product market entry. To examine entry the sample is expanded to include all underwritten offerings and acquisitions, and all of the banks are sorted into four groups; the sample major and minor investment banks, commercial banks previously not in the sample (that includes the universal and foreign banks listed in Appendix I), and the remaining non-sample banks. Major bank market share is further subdivided to highlight the share of the three major banks that are acquired in the sample period and the five lasting major banks. After the Federal Reserve Bank reinterpretations of Section 20 of the 1933 Glass-Steagall Act, in 1987 allowing commercial banks to enter the underwriting markets, and again in 1996, aggressive commercial bank entry into the various markets includes a wave of acquisitions of investment banks. The pattern of market shares over the sample period is reported in Figure 3.

Consider first the market for unseasoned equity offerings shown in Panel A. Major banks' share had relative peaks in 1992 and 1999 and from 2000 onward it is flat. Minor banks' share declined from a typical 10% before 1998 to virtually 0% after 1999, when most minor banks have been acquired. Similarly, there is a substantial decline in other banks' share of the market, from over 20% in the first half to under 3% in the second half. Commercial banks are the main beneficiaries of these declines, as their market share expands from less than 10% in the early 1990s to over 40% in the last four years of the sample period. Nevertheless, the lasting major banks responded competitively to entry pressure, increasing their share of the market from 1994 through 2003. Major banks

responded competitively to entry into the seasoned equity offerings market, where commercial banks again realized a large rise in their market share. Panel B shows that major bank share declines through much of the sample period reflecting a fall in market share of the three acquired major banks, as the lasting five major banks maintained their share of seasoned equity offerings.

Panel C reports a steady decline in major bank share of the corporate bond market. Through 1997, major bank share falls from 86% to 70%, then another 42% over the subsequent six years. Some of the lost share reflects commercial bank takeover of investment banks. Panel C confirms that the commercial banks continued to expand their market share not only by acquisitions, as the lasting major banks continue to lose share after 1996.

Significant competitive pressure is also evident in the acquisition bidder and target advisor markets, reported in Panels D and E. Through the sample period commercial banks have expanded their share by 25%, largely through acquisitions. The major banks remained competitive and held on to their market share. The surviving five major banks increased their share of the bidder market while their share of the target market stays flat.

V.3. The market for bank control

An active market for bank control also exerts external discipline on bank governance. One measure of control activity is the prevalence of bank takeovers. As reported earlier, 16

of the 28 sample banks, three major banks and 13 minor banks are acquired in the sample period. There is thus ample evidence of a vigorous market for bank control.[17]

V.4. The power-pay hypothesis

The Bebchuck and Fried's (2004) power-pay theory predicts a decline in CEO pay-sensitivity as CEO power over the board increases. Here we consider the impact of a number of CEO power indicators on CEO pay sensitivity. The estimates in Columns 1 through 4 of Table 5 reveal no significant difference in the sensitivity for changes in the CEO power indicators at major banks. Similarly insignificant results are reported in Columns 5 through 8 for the minor banks. These results suggest the power-pay thesis is not descriptive of CEO behavior in investment banking.

V.5. The scandal hypothesis

To assess the scandal hypothesis that bank governance unexpectedly declined in the second half of the sample period, we first consider board independence. A significant decline in board independence in the scandal period is consistent with suboptimal

[17] As a further check for pressure from the market for bank control, we examined the Gompers, Ishii, and Metrick (2003) Governance Index, tabulated from corporate governance provisions using data from the Investor Responsibility Research Center. They note that the index reflects to a large extent the presence of barriers between the firm and the market for corporate control, where a higher value is associated with weaker stockholder rights. The Index is available for only a subset of our sample banks, with the mean values in each sub-period ranging from 8.4 to 10.3. Gompers et al. (2003) report the average Index value for their samples of firms ranges from 8.9 to 9.4 (with median of 9), with a standard deviation of 2.8. Thus, the banks' Index value is not significantly different from the average for all firms in the Index. The performance of the Index rejects the notion that there was any decline in pressure in the banks from the market for bank control.

governance in the scandal years. However, as Panel B of Figure 1 shows, board independence continues to rise over the sample period, for major banks and minor banks.

A second test of the scandal hypothesis investigates CEO pay-sensitivity. A decline in pay-sensitivity in the second half of the sample period, and thus a decrease in CEO attentiveness to shareholder interest and thus optimal governance, is consistent with the scandal hypothesis. However, the sensitivity estimates in Columns 1 and 2 of Panel A Table 7 reveal no significant difference in the sensitivity in the second half of the sample period relative to the first half. They also show that the pay-sensitivity results are not caused by a single unusual year.

Further evidence on the scandal hypothesis may be found in the bank's stock returns. Bank stock returns are market participants' external assessment of performance that should reflect unanticipated deterioration in governance, should it occur (Core, Guay, and Rusticus, 2005).

Stock return performance is examined using abnormal monthly portfolio holding period returns, estimated using cross-section regression of the bank monthly portfolio returns on the three Fama and French (1992, 1993) factors. Barber and Lyon (1997) find that the three factors apply to the set of financial firms originally excluded from Fama and French (1992). The factors include; R_M-R_f, the return on the market less the monthly Treasury Bill rate; SMB is the mean return on three small portfolios less the mean return on three big portfolios; and HML is the mean return on two value portfolios less the mean return on two growth portfolios. The scandal hypothesis predicts that the indicators should have a weakening impact on bank abnormal return performance.

The 1990-2003 mean abnormal returns (*p-values in parentheses*) below show that major banks and minor banks earn positive abnormal returns over the full 168 month period.

Period	Major banks	Minor banks
1990-2003	1.75	1.47
	(0.00)	(0.01)
1990-1996	1.20	1.13
	(0.02)	(0.03)
1997-2003	1.84	1.82
	(0.04)	(0.05)

Abnormal returns are also earned in the first and second halves of the sample period. These results are consistent with improvements in bank governance through the sample period. They contradict the notion that bank governance deteriorated over the sample period.

To further test the scandal hypothesis we examine cross-section regressions of the bank monthly portfolio returns on the three Fama and French (1992, 1993) factors. To conduct the tests the banks are formed into major and minor bank portfolios whose respective monthly returns are computed. The two portfolio return series are pooled then regressed on the three Fama-French factors. This allows us to introduce the dummy variable, which is one for the major bank returns. Panel B of Table 7 reports the estimation results. The coefficient estimate for this dummy variable is a controlled test of the hypothesis that the performance of the major banks is significantly different from the performance of the minor banks. The statistically significant intercept in this estimation reported in Column 1, indicates that the minor banks had positive abnormal performance over the sample period. The test for a stock return difference between the major and minor banks shows that the

difference is not statistically significant. Thus we cannot reject the conclusion that major and minor banks enjoyed similarly positive abnormal returns over the sample period.

To again test the scandal hypothesis the respective major and minor bank portfolios are divided into two sub period portfolios for 1990-1996 and 1997-2003. After computing monthly returns for each of the portfolios the returns are pooled, a dummy variable that is equal to one for the major banks and one that equals one for 1990-1996 portfolio returns are added. The test results for major banks are reported in Column 2. The intercept is statistically significant consistent with positive abnormal performance of the minor banks. The major bank dummy variable is not statistically significant confirming that major and minor banks earned positive abnormal returns. The dummy indicator for the first period has a negative but statistically insignificant effect. Thus, we cannot reject the conclusion that major and minor bank stock returns outperformed the market in both halves of the sample period.

Columns 3 and 4 report the results using the equally weighted returns. Those results confirm the value weighted returns results, indicating that none of the selected features are associated with evidence of suboptimal governance at the banks.

VI. Conclusion

This paper introduces an alternative industry based research method that conducts a number of tests for assessing governance performance, and applies it to investment banking. The investment banking industry highlights the ability of the industry method to further our understanding of governance performance. The period of study is tumultuous, as banking transactions climbed to historically high levels in a number of markets, and the banks and their bankers were exposed to increased legal plight. The period also features the repeal of Glass-Steagall, the passage of Sarbanes-Oxley, and stepped-up rule-making by regulators.

A number of bank governance qualities when compared with other industries may at first glance seem indicative of suboptimal governance. Bank boards are larger than normal and their directors seem to be unusually busy. Their CEOs have considerable power, with high pay, and they typically are the chairman. However, the industry perspective shows many qualities are directly related with board independence, which often is seen as an indicator of good governance. We also find that CEO compensation is significantly positively correlated with changes in equity value. Moreover, none of the suspect governance qualities adversely affect pay-sensitivity, as is expected if they are governed suboptimally. The banks were exposed to persistent external pressure from a number of product markets, where entry has been easy, and from the market for bank control, that is sufficient to sustain good governance.

In theory, bank governance behavior should reflect a specialization and division of labor through survival, in response to investment opportunities and market pressures. Our

findings show that many banks persevered in highly competitive product markets, under steady pressure from the market for bank control. This suggests that management is disciplined to increase firm value, and that the governance function has evolved efficiently in response to the pressure. The findings agree with a more pronounced division of labor that enhances the power, and thus specialization, of both the CEO and the board. The CEOs, which typically come from within the bank's ranks, appear to be highly focused on internal operations, with few links to other firm's boards. They appear to be empowered with great flexibility over top-level decision-making, often acting as chairman. They have high pay that gives them incentive to raise stock price, which they generally do. The directors appear more specialized than normal, more independent than normal, and have higher than normal reputations. They seem particularly focused on external bank relationships, as many sit on multiple outside boards of many prominent US firms. This noticeable specialization may facilitate stronger relationships for the bank, to generate future business and to gather information relevant to their business. The directors have enhanced power to counterbalance empowered CEOs, as they control their committees, and contractually motivate their CEOs to raise the value of the firm's equity.

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Appendix I

Shown are several of the major commercial/universal/foreign banks reported by SDC that lead or co-lead an underwriting syndicate of common stock (unseasoned or seasoned) or bonds, or provided acquisition advisory services to a bidding firm or a target firm during the sample period.

ABN Amro
Bank of America
BB&T Capital Markets
BNY Associates
BT Securities
Barclays PLC
BancBoston Robertson Stephens
Banc One Capital Corp.
Bank of Tokyo Ltd.
Barrington Capital Group
CIBC Oppenheimer
CSFB
Chase Capital Partners
Citibank
Continental Bank
Deutsche Bank
Dresdner Bank AG
First Chicago Capital Markets
First Colonial Securities Group
First Union Capital Markets Group
First United Equities
Fleet Associates
HSBC Corporate Finance Limited
Hamilton Capital Partners
IBJ International Limited
JP Morgan
NationsBanc
Pacific Crest Securities
Paragon Capital
RBC Capital Markets
SBC Warburg
Southcoast Capital Corp.
State Street Boston Capital
Sun Trust Banks
Toronto Dominion Bank
UBS Warburg
US Bancorp
Wachovia Bank
Wells Fargo & Co.

Table 1. Investment bank sample life, size, and market shares for underwriting and acquisition advice. The sample is publicly traded investment banks found each year of 1990-2003 on CRSP, for which a proxy statement is also found. Banks acquired during the sample period are noted with an asterisk. Assets is the latest entry for bank assets found on Compustat, in constant 2003 dollars using the Consumer Price Index. Average annual market share for lead or co-lead underwriter on unseasoned and seasoned equity offerings (with pro-rata credit given to co-lead underwriters), and for advisor roles for acquirers and target firms in mergers and acquisitions, are from the Securities Data Company, Worldwide New Issues Data Base.

			Market shares %				
			Security offerings			Acquisition advisors	
			Common stock		Bonds	Acquirer	Target
Investment banks	Sample life	Assets ($bill.)	Unseasoned	Seasoned			
Panel A. Major banks							
Morgan Stanley	1/90 - 12/03	602.84	11.0	10.1	13.3	11.2	12.1
Merrill Lynch	1/90 - 12/03	494.52	7.9	11.5	14.0	9.9	6.2
Goldman Sachs	5/99 - 12/03	403.80	13.1	13.8	13.8	12.3	17.3
Lehman Brothers	5/94 - 12/03	312.06	5.7	6.9	7.9	5.4	5.7
Salomon*	1/90 - 11/97	223.44	2.6	8.1	10.9	3.5	3.8
Bear Stearns	1/90 - 12/03	190.30	3.1	2.6	2.0	4.5	3.1
DLJ*	10/95 - 11/00	115.58	6.3	5.6	3.3	4.2	2.3
Paine Webber*	1/90 - 11/00	65.32	2.5	2.1	0.9	0.9	0.8
Sum all major banks			52.2%	60.7%	66.1%	51.9%	51.3%
Sum acquired major banks			11.4%	15.8%	15.1%	8.6%	6.9%

(continued)

Table 1 (cont.)

Panel B. Minor banks							
Legg-Mason	1/90 - 12/03	7.26	0.3	0.1	0.1	0.0	0.0
Raymond James	1/90 - 12/03	6.11	0.6	0.5	0.0	0.1	0.1
A. G. Edwards	1/90 - 12/03	4.44	0.5	0.2	0.1	0.0	0.1
First Michigan*	1/90 - 9/97	4.04	0.1	0.0	0.0	0.0	0.1
Alex Brown*	1/90 - 8/97	2.92	6.6	4.6	0.2	0.8	1.8
Dain Rauscher*	1/90 - 1/01	2.65	0.5	0.2	0.0	0.1	0.2
Advest*	1/90 - 1/01	2.17	0.1	0.1	0.0	0.0	0.0
Morgan Keegan*	1/90 - 3/01	1.80	0.4	0.3	0.0	0.0	0.0
Piper Jaffray*	1/90 - 5/98	1.06	0.7	0.3	0.0	0.2	0.2
McDonald Investments*	1/90 - 10/98	0.79	0.4	0.1	0.1	0.1	0.2
Interstate Johnson Lane*	1/90 - 3/99	0.71	0.1	0.6	0.0	0.0	0.0
Hambrecht & Quist*	8/96 - 12/99	0.66	2.2	1.6	0.0	0.3	0.4
Stifle Financial	1/90 - 12/03	0.41	0.0	0.1	0.0	0.0	0.1
First Albany	1/90 - 12/03	0.40	0.1	0.1	0.0	0.0	0.0
Scott-Stringfellow*	1/90 - 3/99	0.15	0.1	0.1	0.0	0.0	0.0
Montgomery*	7/97 - 1/02	0.14	3.2	3.6	0.0	0.6	0.6
Friedman, Billings, Ramsey	12/97 - 12/03	0.21	0.8	0.1	0.0	0.1	0.1
Rodman & Renshaw*	1/90 - 2/98	0.05	0.1	0.2	0.0	0.0	0.1
Paulson	1/90 - 12/03	0.04	1.7	0.1	0.0	0.0	0.0
Ryan Beck *	1/90 - 6/98	0.04	0.0	0.0	0.0	0.0	0.1
Sum all minor banks			18.5%	12.9%	0.6%	2.4%	4.0%
Sum acquired minor banks			14.6%	11.8%	0.4%	2.2%	3.6%

* These banks are acquired during the sample period.

Table 2. Bank governance structure. The sample is described in Table 1. Major banks are Bear Stearns, DLJ, Goldman Sachs, Lehman Brothers, Merrill Lynch, Morgan Stanley, Paine Webber, and Salomon. All other banks are minor. Data in parentheses exclude Bear Stearns. Tenure is number of years the director or CEO has held his position. A director is independent unless he or she is either an insider (employed full-time by the bank) or gray (i.e., a former employee or has a family or commercial tie with the bank other than their directorship). Appointments is the number of appointments on outside boards per outside director. Total appointments is appointments per bank. 5% blockholders is the collective ownership of stockholders that are reported in the proxy statement to hold 5% or more of the outstanding equity. Institutional ownership is the fraction of common stock held by institutional investors as of December. Compensation is salary plus bonus, expressed in constant 2003 dollars using the Consumer Price Index, millions of dollars.

	Major banks				Minor banks	
	Mean		Median		Mean	Median
Panel A. Banks						
Asset value ($bill.)	197.4[1]		168.7[1]		1.5	0.8
Asset growth rate (%)	14.3[1]		13.2[1]		13.5	9.3
Long term debt-ratio (%)	55.4[1]		56.4[1]		14.3	9.3
Payout (%)	1.7		1.3		2.1	1.5
Market-to-book (%)	102.6[1]		101.5[1]		106.9	103.8
Panel B. CEOs						
Age (years)	60.6[1]		60.5[1]		50.3	49.0
Tenure (years)	9.1		9.0		8.6	8.0
Panel C. Directors (data in parentheses exclude Bear Stearns)						
Age (years)	58.7	(60.9)	59.0	(62.0)	56.2	56.0
Tenure (years)	4.2[1]	(5.0)[1]	3.0[1]	(4.0)[1]	5.0	4.0
Number of directors	12.7[1]	(10.8)[1]	10.7[1]	(11.0)[1]	8.2	7.0
Inside directors (%)	29.4[1]	(26.7)	28.1[1]	(25.9)[1]	42.8	37.5
Gray directors (%)	16.7	(18.0)	18.7	(20.7)	12.6	12.5
Independent directors (%)	50.8	(55.3)	46.9	(53.3)	46.9	42.9
Appointments	2.9[1]	(2.8)[1]	3.0[1]	(2.9)[1]	1.8	1.7
Total appointments	24.6[1]	(25.5)[1]	25.4[1]	(23.4)[1]	9.0	8.0
Panel D. Ownership (%)						
CEO	1.2[1]		0.9[1]		8.5	3.2
Inside directors	3.0[1]		1.8[1]		11.7	8.7
Gray directors	0.8[1]		0.0[1]		2.9	0.3
Independent directors	0.1[1]		0.1[1]		1.9	0.5
5% blockholders	28.1		21.8		19.5	14.2
Institutions	54.8[1]		55.8[1]		21.9	15.7

[1] Major banks differ statistically significantly from the minor banks at the 0.01 level, using for the means the two-sided Student's *t*-statistics and for the medians Wilcoxon rank statistics.

Table 3. Board performance. The sample is described in Table 1. Major banks are Bear Stearns, DLJ, Goldman Sachs, Lehman Brothers, Merrill Lynch, Morgan Stanley, Paine Webber, and Salomon. All other banks are minor. Data in parentheses exclude Bear Stearns. Shown is the average number of bank directors with and without outside officer or director appointments at other firms, and the average number of appointments by outside firm type; either firms are among the S&P 500, S&P 600, or S&P 400, or other firms.

	Major banks				Minor banks	
	1990-1996		1997-2003		1990-1996	1997-2003
Panel A. Number of directors						
Appointed	8.3	(7.3)	8.5	(8.6)	5.1	6.0
Not appointed	6.1	(3.4)	2.7	(2.2)	3.5	2.9
Sum	14.4	(10.7)	11.2	(10.8)	8.6	8.9
Panel B. Outside appointments						
To S&P index firms	7.4	(7.8)	10.7[1]	(11.6)	1.1	2.0
To other firms	15.1	(11.1)	15.6[1]	(13.9)	6.4	9.9[1]
Sum	22.5	(18.9)	26.3[1]	(25.5)	7.5	11.9[1]

[1] Statistically significantly different from the 1990-1996 period at the 0.05 level using Student's *t*-tests.

Table 4. CEO hypotheses tests. The sample is described in Table 1. Major banks are Bear Stearns, DLJ, Goldman Sachs, Lehman Brothers, Merrill Lynch, Morgan Stanley, Paine Webber, and Salomon. All other banks are minor. Reported for the classifications are the mean and median board independence, which is the fraction of directors who are independent, where a director is independent unless he or she is either an insider (employed full-time by the bank) or gray (i.e., a former employee or has a family or commercial tie with the bank other than their directorship). Independence during CEO tenure is the independence when the CEO starts his tour and independence at the last year of his tour. CEO is chairman occurs in years when the CEO is the chairman of the board. CEO is involved occurs in years when the CEO sits on the board's nominating committee. Board is busy is a dummy variable equal to one when the board's number of outside appointments held by outside directors is above the sample median.

	Major bank independence (%)			Minor bank independence (%)		
	Mean	Median	N	Mean	Median	N
Panel A. CEO tenure						
Start	48.9	50.0	11	30.3	21.4	15
Finish	58.2[2]	53.3	11	43.0[1]	40.0[1]	15
Panel B. CEO is chairman						
No	38.0	33.3	19	47.7	47.2	50
Yes	55.2[1]	57.1[1]	55	46.3	41.7	75
Panel C. CEO is involved						
No	44.1	40.0	53	48.8	42.9	103
Yes	67.7[1]	66.7[1]	21	38.1[2]	33.0[2]	22
Panel D. Board is not big						
Big	54.1[1]	56.5[1]	36	45.4	43.5	61
Not big	46.7	45.7	26	44.9	44.1	64
Panel E. Board is not busy						
Busy	58.5[1]	61.5[1]	32	46.7	40.0	62
Not busy	45.0	41.7	42	47.1	42.9	63

[1 (2)] Statistically significantly different mean (median) from the No case, and for CEO tenure different from the start, at the 0.01 (0.05) level using two-sided Student's *t*-statistic (Wilcoxon signed rank statistic).

Table 5. CEO pay-sensitivity tests. The sample is described in Table 1. Major banks are Bear Stearns, DLJ, Goldman Sachs, Lehman Brothers, Merrill Lynch, Morgan Stanley, Paine Webber, and Salomon. All other banks are minor. Reported are regressions of CEO annual compensation (salary plus bonus), on the common stock value added and total assets in the year of CEO pay.

Independent variables	Major banks	Minor banks
Intercept	2.66	0.37
	(0.09)	(0.09)
Assets	0.12	6.39
	(0.01)	(0.00)
Value added	0.27	1.83
	(0.00)	(0.00)
Adjusted R^2	0.53	0.75
N	55	91

Table 6. Governance reform tests. The sample is described in Table 1. Major banks are Bear Stearns, DLJ, Goldman Sachs, Lehman Brothers, Merrill Lynch, Morgan Stanley, Paine Webber, and Salomon. Other banks are minor. Reported are regressions of CEO annual pay (salary plus bonus) on common stock value added and total assets; and four governance determinants, each as a dummy variable and multiplied times value added. CEO alone is one if the CEO is not the chairman; and CEO involved is one if the CEO is on the nominating committee; Dependent, is one if a minority of the directors is independent; Busy is one if outside directors average three or more officer or director appointments at outside firms. In parentheses are *p*-values for two-sided Student's *t*-tests.

Independent	Major banks				Minor banks			
variables	(3)	(4)	(1)	(2)	(7)	(8)	(5)	(6)
Intercept	2.80	1.75	2.74	3.18	0.33	0.41	0.38	0.37
	(0.08)	(0.57)	(0.09)	(0.10)	(0.19)	(0.08)	(0.12)	(0.09)
Assets	0.10	0.14	0.12	0.14	6.48	6.34	6.34	6.36
	(0.04)	(0.03)	(0.02)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Value added	0.29	0.28	0.27	0.83	1.70	1.88	2.18	1.83
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.06)	(0.00)
CEO alone	1.04				0.02			(0.83)
	(0.41)				(0.94)			
CEO alone × Value added	-0.19				1.65			
	(0.46)				(0.43)			
CEO involved		0.77				-0.10		
		(0.72)				(0.71)		
CEO involved × Value added		-0.06				-1.23		
		(0.80)				(0.64)		
Dependent			-0.84				-0.14	
			(0.77)				(0.66)	
Dependent × Value added			0.61				-0.39	
			(0.39)				(0.81)	
Busy				-0.72				
				(0.56)				0.11
Busy × Value added				-0.59				(0.79)
				(0.02)				-4.60
Fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Adjusted R^2	0.52	0.51	0.51	0.51	0.74	0.74	0.74	0.74
N	55	55	55	55	91	91	91	91

Table 5. Scandal hypothesis tests. The sample is described in Table 1. Major banks are Bear Stearns, DLJ, Goldman Sachs, Lehman Brothers, Merrill Lynch, Morgan Stanley, Paine Webber, and Salomon. All other banks are minor. Panel A reports regressions of CEO annual compensation (salary plus bonus), on the common stock value added and total assets in the year of CEO pay, where 1990-1996 is a dummy that equals for the first half of the sample period. Panel B reports monthly return regressions on the three Fama-French (1992, 1993) factors are: R_M-R_f, the return on the market less the one-month Treasury bill rate; SMB is the mean return on three small portfolios less the mean return on three big portfolios; and HML is the mean return on two value portfolios less the mean return on two growth portfolios. Five dummy variables are: Major banks are Bear Stearns, DLJ, Goldman Sachs, Lehman Brothers, Merrill Lynch, Morgan Stanley, Paine Webber, and Salomon. All other banks are minor. In parentheses are *p*-values for two-sided Student's *t*-tests.

Independent variables	Major banks	Minor banks
Panel A. CEO pay sensitivity tests		
Intercept	5.70	0.29
	(0.02)	(0.20)
Assets	0.05	6.56
	(0.46)	(0.00)
Value added	0.24	1.64
	(0.00)	(0.01)
1990-1996 × Value added	0.29	1.53
	(0.49)	(0.47)
Adjusted R^2	0.54	0.75
N	55	91

	Value-weighted returns		Equally-weighted returns	
Independent variables	(1)	(2)	(3)	(4)
Panel B. Stock return tests				
Intercept	1.30	1.57	1.08	1.27
	(0.00)	(0.00)	(0.00)	(0.02)
R_M-R_f	1.60	1.60	1.50	1.50
	(0.00)	(0.00)	(0.00)	(0.00)
SMB	0.10	0.09	0.30	0.29
	(0.27)	(0.29)	(0.00)	(0.00)
HML	0.26	0.26	0.49	0.48
	(0.02)	(0.02)	(0.00)	(0.00)
Major banks	-0.45	-0.28	-0.22	-0.22
	(0.65)	(0.65)	(0.72)	(0.72)
1990-1996		-0.52		-0.39
		(0.40)		(0.54)
Adjusted R^2	0.57	0.57	0.53	0.53
N	336	336	336	336

Table 8. Product market concentration. Shown are the annual Herfindahl Indices and number of unique banks as underwriters or advisors in each of five product markets. The sample is all unseasoned equity offers, seasoned equity offers, bond offerings, acquisition bidders, and acquisition targets, that used services of investment banks, during 1990-2003, in each year that led or co-led an underwriting syndicate for a corporate common stock or a corporate bond offering, or was an advisor in a corporate acquisition to either the bidder or target firm, as reported on the Securities Data Company, Worldwide New Issues Data Base. The sample is restricted to deal sizes above $5 million in constant 2003 dollars, and excludes financial firms (SIC codes in the 6000s).

	Financing markets									Acquisition markets					
	Common stock						Bonds			Bidder			Target		
	Unseasoned			Seasoned											
	Herfindahl		N	Herfindahl		N	Herfindahl		N	Herfindahl		N	Herfindahl		N
Year	VW	EW		VW	EW		VW	EW		VW	EW		VW	EW	
1990	695	443	51	980	501	43	1543	1617	22	702	384	81	969	453	102
1991	789	331	73	972	406	69	1427	1396	26	1122	302	79	941	372	91
1992	776	230	109	924	377	80	1170	1070	32	659	287	91	701	373	101
1993	489	197	127	749	321	100	1036	958	38	771	309	93	619	273	128
1994	412	157	135	699	375	83	1085	951	32	645	301	98	866	320	120
1995	666	253	125	732	361	86	1019	862	34	513	286	123	772	318	132
1996	527	216	140	612	332	92	1013	970	37	686	306	109	721	318	137
1997	569	209	135	699	385	77	1078	1130	31	696	298	118	760	315	173
1998	706	345	82	770	493	61	1118	1050	34	652	298	122	935	306	164
1999	942	560	65	917	613	53	1056	977	38	1009	351	120	861	280	167
2000	915	633	52	1036	642	50	957	872	41	856	356	110	1049	299	153
2001	1085	727	26	1126	805	43	1130	932	34	1078	366	94	989	317	138
2002	1120	714	26	1031	708	41	987	836	34	1154	367	92	853	318	134
2003	1087	706	25	941	606	43	887	765	35	853	388	83	1000	289	142
Mean	692[1]	358[1]	82	803[1]	451[1]	63	1044	973[1]	31	753[1]	301[1]	95	788[1]	304[1]	124

[1] Statistically significantly different from 1,000 at the 0.01 level using the two-sided Student's *t*-statistic.

Figure 1. CEO performance. The sample is publicly traded investment banks in each year during 1990-2003 as reported by CRSP, for which a proxy statement is found. Major banks are Bear Stearns, DLJ, Goldman Sachs, Lehman Brothers, Merrill Lynch, Morgan Stanley, Paine Webber, and Salomon. All other banks are minor. Panel A reports CEO salary plus bonus, expressed in constant 2003 dollars. Panel B reports the fraction of bank years in which the CEO is board Chairman. Panel C reports the fraction of bank years in which the CEO is on the nominating committee.

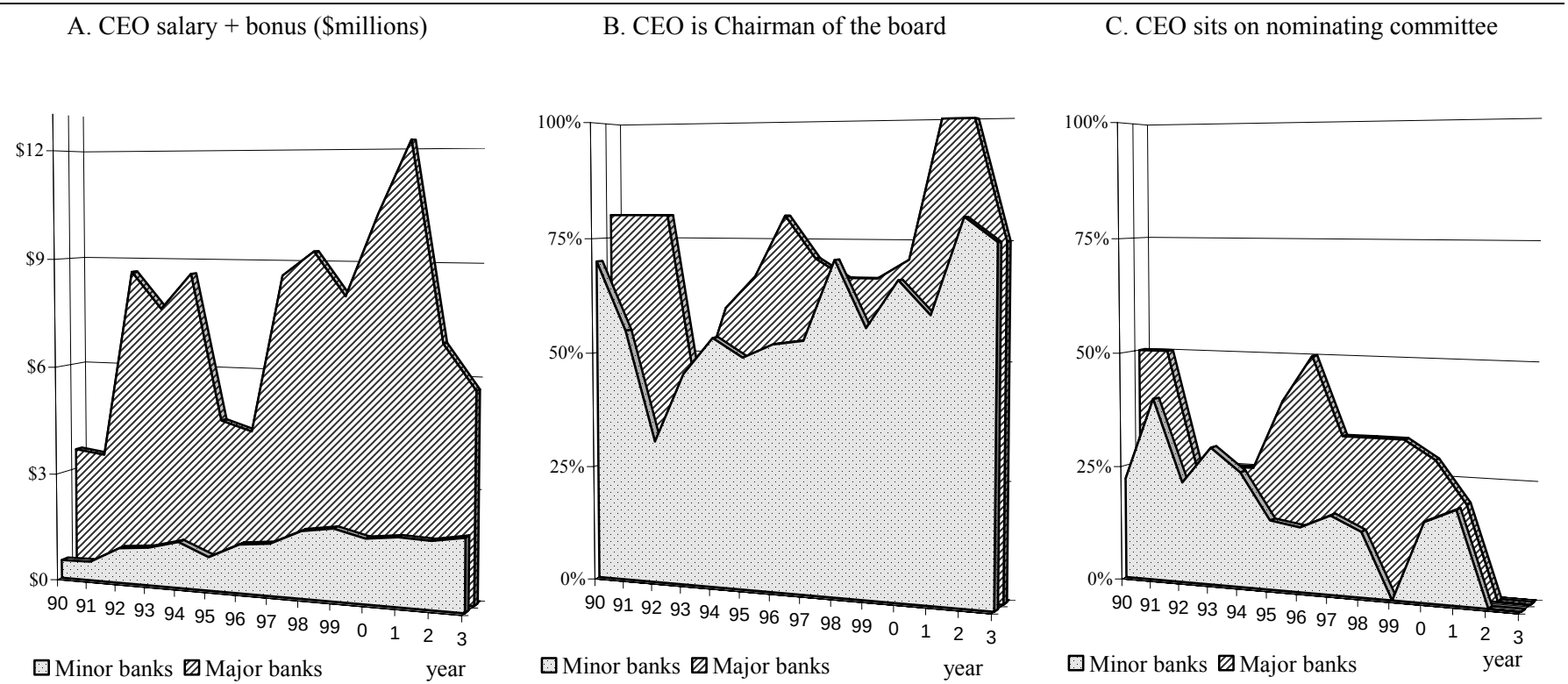


Figure 2. Board performance. The sample is publicly traded investment banks in each year during 1990-2003 as reported by CRSP, for which a proxy statement is found. Major banks are Bear Stearns, DLJ, Goldman Sachs, Lehman Brothers, Merrill Lynch, Morgan Stanley, Paine Webber, and Salomon. All other banks are minor. Panel A reports average board size, the number of directors on the board. Panel B. reports board independence, the fraction of directors who are outside directors. Panel C. shows the average number of officer and director appointments held by bank directors who hold outside appointments.

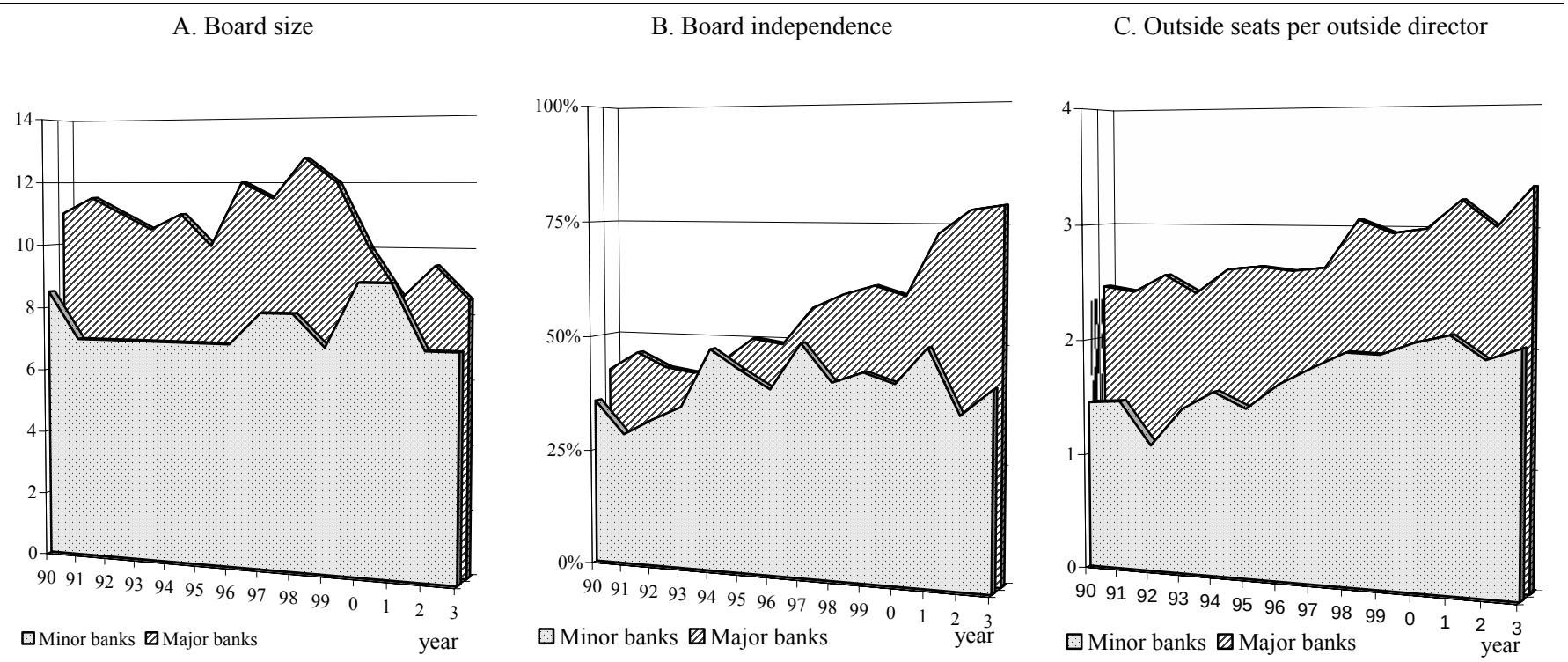
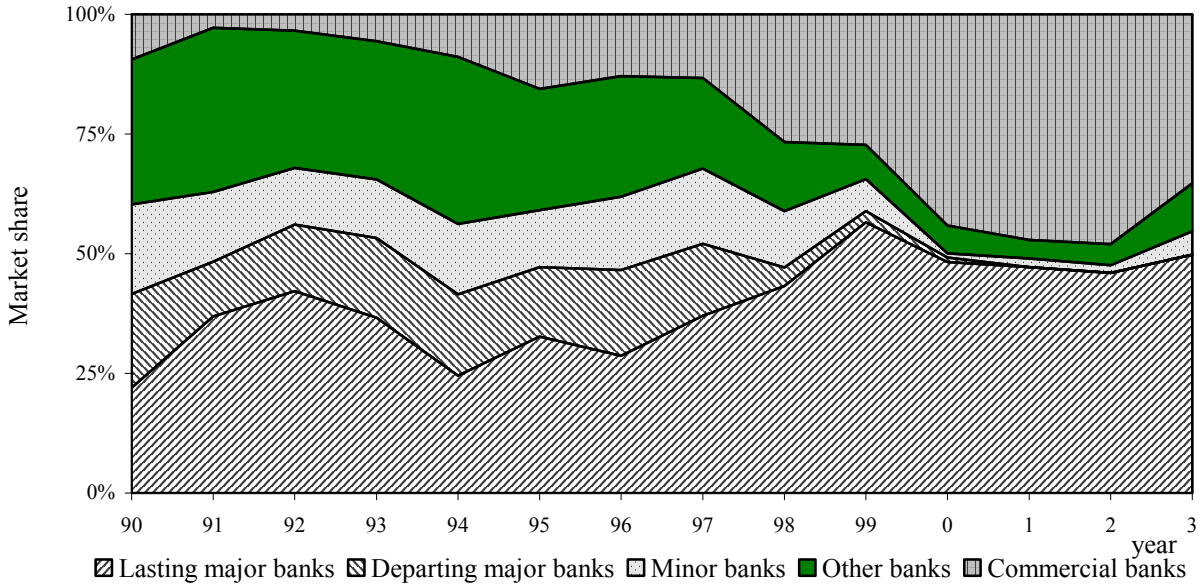


Figure 3. Market penetration. The sample is all investment banks during 1990-2003, in each year that lead an equity or bond underwriting syndicate as reported on the Securities Data Company Data Base. Shown are market shares for common stock offerings, unseasoned in panel A and seasoned in Panel B, offerings of bonds in Panel C, and for acquisition advisor for bidder in Panel D and for target in panel E, for banks in four groups; major banks are Bear Stearns, DLJ, Goldman Sachs, Lehman Brothers, Merrill Lynch, Morgan Stanley, Paine Webber, and Salomon, minor banks are other publicly traded investment banks, commercial banks include commercial, universal and foreign banks, and the remaining banks.

A. Unseasoned equity market



B. Seasoned equity market

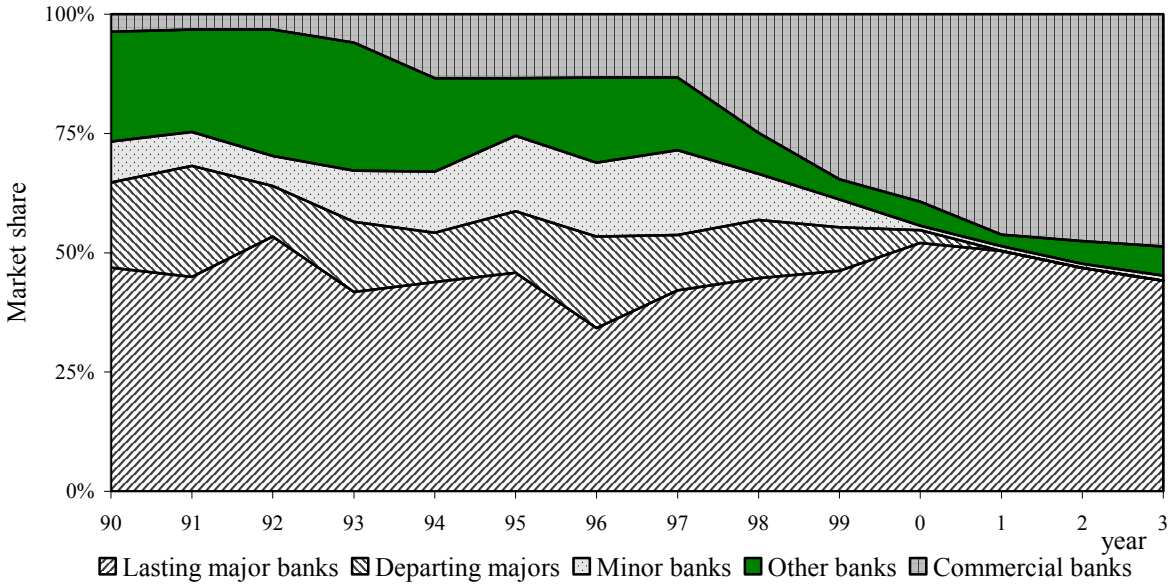


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Figure 3 (cont.)

C. Bond market

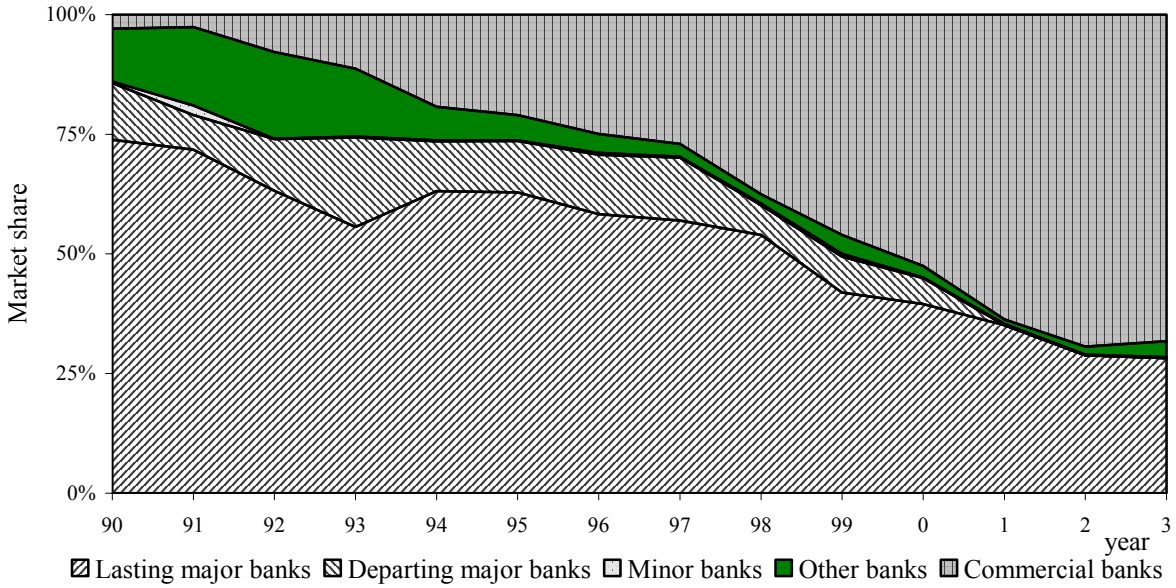

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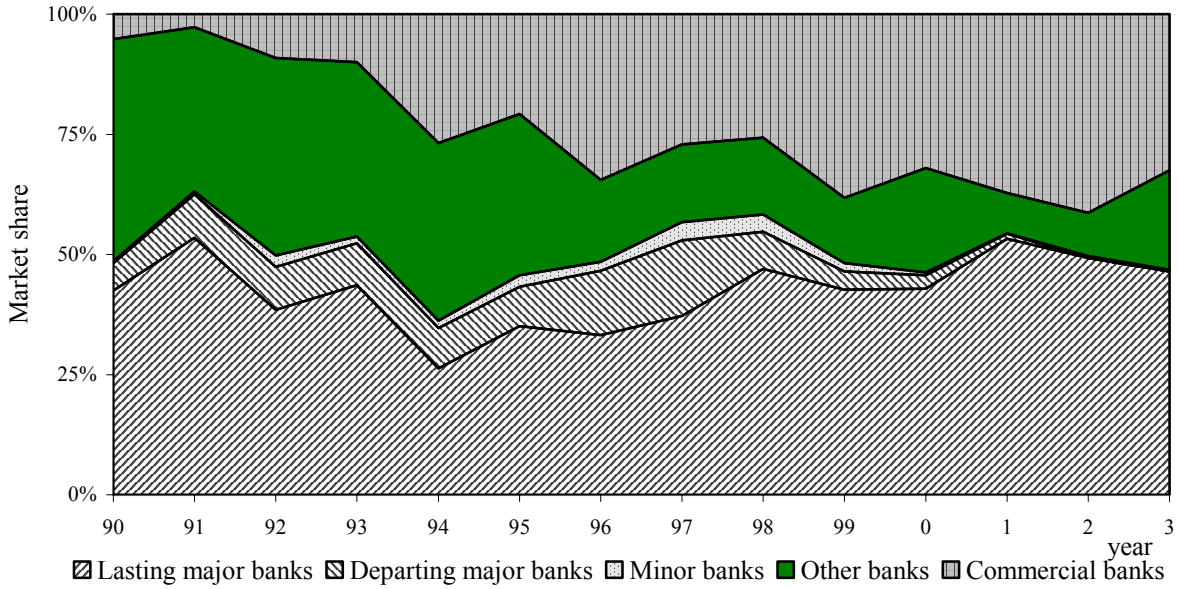
Figure 3 (cont.)

D. Corporate takeover market: Bidder



E. corporate takeover market: Target