

The Failure of Drexel Burnham Lambert: Evidence on the Implications for Commercial Banks*

LAWRENCE M. BENVENISTE, MANOJ SINGH,
AND WILLIAM J. WILHELM, JR.

*Wallace E. Carroll School of Management, Boston College, Chestnut Hill,
Massachusetts 02167*

Received December 16, 1992

We argue that since bank loans and publicly traded sub-investment-grade debt, or junk bonds, are close substitutes for one another, the recent failure of Drexel Burnham Lambert created a competitive opportunity for commercial banks. Consistent with this hypothesis, we observe within the commercial banking industry a positive wealth effect associated with Drexel's failure. The distribution of the wealth effect across commercial banks and Drexel's investment banking rivals is consistent with the wealth effect being primarily a reflection of market expectations of a return to traditional intermediated funding of sub-investment-grade debt. *Journal of Economic Literature* Classification Number: G2, Financial Institutions and Services. © 1993 Academic Press, Inc.

1. INTRODUCTION

Prior to the late 1970s the market to fund sub-investment-grade debt was an intermediated market dominated by commercial banks. The 1980s, however, witnessed a dramatic shift in the balance of power within the industry and a subsequent disintermediation of sub-investment-grade debt

* The authors thank Martin Fridson, Leonard Van Drunen, Jim O'Brien, Richard Ruback, Hassan Tehranian, Bob Taggart, and the editor and referees for helpful comments. Ideas regarding the connection between the junk-bond market and the commercial banking industry grew from discussions with Stuart Greenbaum. We are also grateful to the Debt Markets Group at Merrill Lynch for providing high-yield bond index data and to Helga Abreu for research assistance.

coinciding with Drexel Burnham Lambert's development of a public market for original-issue junk bonds.¹ Drexel's decade-long domination of the junk-bond market suggests that the firm maintained a unique capacity for the production of junk-bond underwriting and trading services. If so, Drexel's demise, culminating with the firm's February 13, 1990, Chapter 11 bankruptcy filing, represented a competitive opportunity for commercial banks as sub-investment-grade borrowers who were previously on the margin between seeking a bank loan or entering the public debt market could turn to commercial banks to fund their debt.

We investigate this implication of Drexel's failure by studying the performance of a portfolio of commercial bank stocks around events leading up to and including Drexel's failure. Following Tufano (1989) we contend that Drexel's pioneering efforts allowed the firm to establish itself as an inframarginal competitor in the junk-bond segment of the market to fund sub-investment-grade debt. We argue further that the production technology, predominately reputational capital, by which Drexel maintained its dominant role in the market was not expected to be preserved during the events leading up to and including the firm's reorganization. Assuming these conditions were maintained and that the commercial banking industry was not perfectly competitive, we predict that Drexel's exit from the junk-bond market produced a positive wealth effect for commercial banks expected to benefit from reintermediation of sub-investment-grade debt. Our evidence is consistent with this hypothesis. Specifically, we observe a two-day excess return of approximately 6% for the value-weighted portfolio of sample banks associated with the March 1989 SEC demand that Michael Milken be dismissed as a condition for settlement of civil charges against the firm. We observe an additional excess return of approximately 7% during the week in which the firm filed for Chapter 11 protection from its creditors.

We argue further that the distribution of wealth effects across the commercial banking industry should reflect the degree to which various segments of the industry faced competition from the junk-bond market. Consistent with this prediction, we find that the wealth effects associated with Drexel's failure were realized by a relatively small number of money-center and large regional banks—the banks most likely to have been competing with the junk-bond market to fund the large- and middle-market firms for which the high fixed costs of entering public debt markets are

¹ As Taggart (1988) and Loeys (1990) point out, junk bonds represent a substitute for bank loans whereby "... the intermediation process is unbundled, with different firms specializing in underwriting, guaranteeing and funding the debt" (Loeys, 1990, p. 246).

less burdensome. Excess returns to a portfolio of smaller banks trading in the over-the-counter market were not statistically different from zero.

Since banks were granted the power to underwrite corporate debt prior to Drexel's failure, the observed wealth effect could be the result of expectations of increased underwriting opportunities following in the wake of Drexel's failure as well as expectations of a return to intermediated funding of sub-investment-grade debt. We attempt to measure the independent contributions of these two factors to the observed wealth effect by examining cross-sectional variation in the excess returns to portfolios of banks classified according to their likely ability to exploit underwriting opportunities produced by Drexel's failure. Consistent with the hypothesis that some fraction of the wealth effect was the consequence of expectations of increased underwriting opportunities, we find a statistically significant difference between the excess return to a portfolio of money-center banks designated as having been best positioned to exploit any new underwriting opportunities and both the remaining money-center banks and large regional banks following the SEC's demand for Milken's dismissal. On the other hand, excess returns to the three portfolios were not statistically different from one another during the bankruptcy-filing week.

We shed further light on this issue by investigating the impact of Drexel's failure on a portfolio of investment banks composed of Drexel's primary rivals in the junk-bond market. These rivals were uniquely positioned to benefit from any underwriting opportunities arising from Drexel's failure. On the other hand, they would not be expected to benefit from a return to intermediated borrowing. Consistent with the hypothesis that the wealth effect observed in the commercial banking industry was primarily the result of greater lending opportunities, we find only weak evidence of a positive wealth effect among Drexel's primary competitors in the investment banking industry. We interpret the evidence as favoring the hypothesis that the wealth effect associated with Drexel's failure was dominated by the market expectation of a return to the traditional intermediated funding of sub-investment-grade debt.

The remainder of the paper is composed of five sections. In Section 2 we provide a brief account of the evolution of the junk-bond market and against this background describe the rise and fall of Drexel and the competitive response of the commercial banking industry to the encroachment of this new market on its traditional borrower base. In Section 3 we derive a set of testable hypotheses related to Drexel's failure. The data and methodology used to test the hypotheses generated in Section 3 are described in Section 4. We discuss our empirical results in Section 5 and present our concluding remarks in Section 6.

2. HISTORICAL BACKGROUND

2.1. *Evolution of the Junk-Bond Market*

Described by some observers as among the most innovative periods in the history of U.S. financial markets (see Miller, 1986), the 1970s and 1980s witnessed profound changes in the structure of American industry and the claims defining ownership and control. Important among these changes was the shift from intermediated bank borrowing to borrowing through public debt markets. As Taggart (1990) documents, commercial bank loans accounted for 36.6% of the total credit market debt raised between 1977 and 1983 but only 18.2% of the total debt raised between 1984 and 1989. In contrast, over the same time intervals, borrowing through public debt markets increased from 30.5 to 54.2% of total debt raised.

The development of a liquid market for original-issue sub-investment-grade bonds was an important element of this shift toward publicly traded debt. Prior to 1977 the market for sub-investment-grade or junk bonds was composed primarily of "fallen angels," that is, bonds issued at investment grade but subsequently downgraded. Having established a trading presence in this market and acting on the belief that the default rates on these bonds did not justify the yield spreads they offered, Drexel almost single-handedly developed the market for original-issue junk bonds. The market grew from barely \$10 billion at the beginning of the 1980s to over \$200 billion outstanding, or over 20% of the total public corporate bond market, at the close of the decade (Taggart, 1990).

In its early stages the market offered a more liquid, but otherwise traditional borrowing alternative to less creditworthy firms previously excluded from public debt markets.² Although this feature of the market attracted considerable interest, much of the growth in the junk-bond market occurred after 1983 following the initial use of junk bonds to finance takeover bids (Taggart, 1990). Junk bonds were particularly attractive to bidders in the market for corporate control because of the speed with which commitments of capital could be obtained and because, as Jensen (1989) observes, they eliminated size as a deterrent to takeover.³

² Other things being equal, this increase in liquidity would be expected to reduce the cost of capital for borrowing firms (see Amihud and Mendelson, 1986).

³ Although junk-bond financing played an important role in the reorganization of American industry during the 1980s, it was not the dominant form of financing for mergers and acquisitions. *Mergers & Acquisitions* (May/June 1987, May/June 1990) reported that the acquisition-related total of junk-bond financing grew from 4.3% of the value of completed deals in 1985 to 9.1% at its height in 1988 before tapering off to 6.5% in 1989. Further, at the

In addition to providing less creditworthy firms with access to the long-term public debt markets. Drexel opened the door to the commercial paper market for these firms with its 1983 offering of short-term paper for Sun Chemical (later Sequa). Although small relative to the \$500 billion in commercial paper outstanding, this segment of the market peaked at \$5 billion outstanding in January 1990 (Post, 1992). Fueled by Drexel's failure and the 1989 default on Integrated Resources commercial paper as well as amendments to Rule 2a-7 (proposed in July 1990 and approved in February 1991; see *Federal Register*, February 27, 1991) restricting money market mutual fund holdings of lower grade commercial paper, junk commercial paper outstanding declined from its 1990 high to \$700 million by the end of 1991. Over the same period of time the high-grade commercial paper market was virtually unaffected (Post, 1992).

2.2. *The Rise and Fall of Drexel*

Drexel was the dominant force in both the primary and the secondary markets for junk bonds. The firm underwrote 287 of the 618 (46%) sub-investment-grade debt issues brought to market between 1978 and 1985 and in dollar terms accounted for 57% of the \$46 billion of new issues brought to market (see Altman and Nammacher, 1987). Drexel's domination of the market was such that even in the face of increasing uncertainty regarding the firm's survival during its last full year of operations (1989), it was able to maintain a 38.6% market share of new issue dollars—approximately four times the market share of the firm's closest competitors (*Wall Street Journal*, January 2, 1990).

The key to Drexel's domination of the primary market was the extensive network of repeat investors assembled and maintained by Michael Milken.⁴ Milken's leverage over members of the network was great, and in some cases extended to control of funds through blind trusts. In support of this investor network, Drexel established the expertise and reputation necessary to perform credit analysis for their issues and monitored

height of its use in 1988, junk-bond financing was used in only 4% of the 4001 deals completed during the year. Thus despite offering great leverage and the ability to move quickly to complete a deal, junk-bond financing accounted for only a small fraction of the capital devoted to mergers and acquisition activity during the decade. More recently, junk bonds have gained favor for the explicit purpose of refinancing bank debt. In fact, 35% of the \$38 billion of junk bonds issued in 1992 were used for this purpose alone (*Wall Street Journal*, May 18, 1993).

⁴ Benveniste and Spindt (1989) and Benveniste and Wilhelm (1990) demonstrate that underwriters can reduce the costs of asymmetric information by establishing a network of regular investors in new issues when potential investors have private information about new issues.

the postissuance activities of issuing firms.⁵ Tactics such as the use of the firm's capital to buy out preferred customers at the issue price when Flight Transportation Corp. went bankrupt less than one month after issuance served to strengthen investor confidence in Drexel's and Milken's willingness to stand behind both their issuers and their investors. Further insight into the degree of Milken's commitment to the market can be gained from the following statement made by a former Drexel employee:

If a company is in trouble, you're on the phone every week to them, finding out things like what the receivables are. Milken's conception is this is a franchise, and he is not willing to besmirch the name with anything going bad. (*Institutional Investor*, August 1986, p. 86)

Drexel's domination of the secondary market for junk bonds, both their own issues and others, was also widely recognized. The firm was generally considered the primary source of junk-bond prices (*Wall Street Journal*, March 16, 1990) and their willingness to commit capital to carrying inventory made them an important source of liquidity in the market. In fact, despite the widespread belief that Drexel's contribution to secondary-market liquidity had diminished, the firm's junk-bond portfolio was believed to be worth \$1.5 to \$2 billion—approximately 1% of the entire market—when it sought protection from its creditors under Chapter 11 of the bankruptcy law.

Given the generally competitive nature of the investment banking industry, it is striking that Drexel dominated the junk-bond market for more than a decade following its inception. Tufano (1989) argues, however, that the ability of an innovating firm to act as an inframarginal competitor may be the natural consequence of financial innovation. Drexel's pioneering efforts in the market virtually assured considerable market share in the early stages of the market's development. With market share came the opportunity to develop the reputational capital which bound together the investor network as well as the opportunity to exploit scale and scope economies in the production of underwriting and trading services. If as a consequence Drexel maintained a low-cost production capacity for underwriting and trading services not easily replicated by its rivals in the short run, the firm's dominant position in the market during the 1980s should not be surprising.

Drexel's domination of the junk-bond market was first challenged on November 17, 1986, when the Securities and Exchange Commission (SEC) issued a formal order of investigation of ties between Ivan Boesky

⁵ See Beatty and Ritter (1986) and Booth and Smith (1986) for a discussion of the importance of reputational capital as a bonding mechanism in the underwriting process for initial public offerings of equity.

and Drexel's junk bond operations, an announcement which produced sharp declines in junk-bond prices and concern among market participants about the future of the secondary market. The investigation culminated with the January 25, 1988, SEC recommendation that civil charges be filed against both Drexel and Milken for major securities-law violations.

Over the next 18 months the federal government applied further pressure by threatening racketeering charges under the Racketeer Influenced and Corrupt Organization law (RICO). On December 21, 1988, Drexel avoided criminal trial by agreeing to plead guilty to six felony counts relating to securities fraud, dismiss Milken following the settlement of criminal charges, and pay \$650 million in fines and restitution. This agreement would take effect, however, only after Drexel reached agreement with the SEC to settle the SEC's September 1988 civil charges alleging that Milken repeatedly caused Drexel to violate federal securities laws.

Milken challenged the provision requiring his dismissal on the grounds that it violated his Constitutional rights. The expectation at the time was that it would take months for the courts to hand down a decision on this challenge. On March 16, 1989, however, the SEC increased the pressure to remove Milken from control of Drexel's junk-bond operations by demanding that Drexel dismiss Milken prior to settlement of the SEC's civil charges against the firm.

Any uncertainty regarding Milken's ability to maintain control of Drexel's junk-bond operations was resolved by his March 29, 1989, indictment on securities-law violations and subsequent leave of absence. Settlement of civil charges followed soon after (April 13, 1989) with Drexel being placed on administrative probation by the SEC and agreeing to, among other things, appoint senior officials, including one in charge of the firm's junk-bond operations, who were acceptable to the SEC. Drexel's ability to maintain investor confidence in the junk-bond market was called into question soon after Milken relinquished control. Following Integrated Resources' default on part of a \$40 million commercial paper obligation, Drexel's failure to commit their own resources to ensure that Integrated's obligations were satisfied or to persuade Integrated's banks to provide additional funding was met with concern among market participants about the viability of other junk-bond-financed companies (*Wall Street Journal*, June 6, 1989).

The remainder of 1989 and early 1990 witnessed the loss of an important component of Drexel's investor base with the congressional ban on thrift participation in the junk-bond market (July 26, 1989), payment of \$500 million of the \$650 million required by the December 1988 settlement of criminal charges, a lowering of the firm's credit rating by Standard and Poors, and a collapse in junk-bond prices which forced Drexel to take

significant writedowns on its inventory of junk bonds in both December 1989 and January 1990. Following the second round of writedowns, Drexel's lenders, led by Citibank, expressed concern over continued funding of the firm's operations (*Wall Street Journal*, February 13, 1990).

Faced with \$130 million in debt obligations due on February 12 and February 13, 1990, Drexel entered a state of financial distress. Following approval by the SEC of a request to transfer excess capital from its broker-dealer subsidiary to the parent company the firm was able to satisfy a \$30 million commercial paper obligation due on February 12. Having been denied permission to draw further on its excess capital, on February 12 the firm simultaneously sought additional bank financing of \$400 million and potential merger partners or investors. The latter effort represented a continuation of a campaign begun in the third quarter of 1989. As with earlier attempts, the effort failed as a result of Drexel's exposure to further civil liabilities estimated to be as large as \$20 billion (*Wall Street Journal*, February 26, 1990). Drexel's borrowing efforts were supported by the Federal Reserve Board's (Fed's) request that Drexel's lead banker, Citibank, and Morgan Guaranty Trust organize a team of banks to provide Drexel with short-term financing. Drexel, offering only their highly illiquid junk-bond portfolio, private placements, and oil and gas-limited partnerships as collateral, however, was turned down late that evening.

At 1 AM on February 13, 1990, Gerald Corrigan, speaking for the Federal Reserve Bank of New York, the SEC, and the Treasury Department, informed Drexel officials that the government might order involuntary liquidation of the firm's regulated broker-dealer subsidiary unless the firm sought protection under Chapter 11 of the bankruptcy law. By 7 AM Drexel officials agreed to seek Chapter 11 protection and the filing took place at 11:15 PM on February 13, 1990.

2.3. *Competitive Response of Commercial Banks*

The shift in corporate borrowing to the public debt markets and, in particular, the emergence of the public market for sub-investment-grade debt increased the competitive pressure on the commercial banking industry. The response from the industry was twofold. The most obvious response involved the efforts of the major money-center banks to be freed from regulations excluding them from direct competition in the public debt markets. Perhaps equally important were innovations within the industry aimed both at offering complementary services to firms issuing debt in the public market and at making the traditional bank loan a more viable substitute for public debt.

Although commercial banks were the traditional lenders to less credit-

worthy firms, prior to 1987 they were constrained from direct participation in public debt markets. Section 20 of the Glass–Steagall Act explicitly prohibits bank affiliation with any corporation engaged principally in the underwriting, distribution, or sale of securities other than the government issues they were long permitted to deal in. Restricted from direct participation in public debt markets, commercial banks participated indirectly through origination and servicing activities related to the securitization of mortgages, credit card debt, and corporate receivables and through the issuance of credit guarantees in the form of backup lines of credit and standby letters of credit.

On December 24, 1986, however, the Fed approved the application of Bankers Trust to engage in the placement of commercial paper issued by third parties. This decision served as the foundation for the March 18, 1987, approval of Chase Manhattan's application to engage in underwriting and dealing in commercial paper in a commercial finance subsidiary and the April 30, 1987, approval of similar applications by Citicorp, J. P. Morgan, and Bankers Trust. To little apparent surprise within the industry, the Fed followed this decision with the January 18, 1989, approval of applications by Citibank, Bankers Trust, Chase Manhattan, J. P. Morgan, and Security Pacific to underwrite and deal in corporate debt.⁶ Morgan received final approval from the Fed on June 19, 1989, with final approval for Citibank, Bankers Trust, and Chase Manhattan coming on July 26, 1989.

Among those banks subsequently approved for underwriting corporate debt, only J. P. Morgan, Bankers Trust, First Chicago, and Citibank actively sought to position themselves in the junk-bond market (*Wall Street Journal*, May 15, 1990). Further, as of September 1990, only J. P. Morgan (11), Citibank (14), Chemical Bank (17), Bankers Trust (19), and First Chicago (20) ranked among the top 20 debt underwriters (*Wall Street Journal*, September 21, 1990).

The limited entry of commercial banks into this new line of business was at least partially related to restrictions placed on the level of their underwriting activities. In an effort to shield the federal deposit insurance fund from risks associated with underwriting and dealing in securities, underwriting activities were required to be conducted through a separate entity (so-called Section 20 subsidiaries). More importantly, in deference to the Glass–Steagall prohibition of bank affiliation with any corporation *engaged principally* in the underwriting of securities, the aggregate of the subsidiary's higher risk underwriting activities were constrained to gener-

⁶ These applications also included requests to permit underwriting and dealing in corporate equity. The Fed, however, postponed granting this power to commercial banks until September 1990.

ating no more than 5% of the subsidiary's gross revenue. These higher risk activities included mortgage-backed securities, consumer debt-backed securities, municipal revenue bonds, and commercial paper as well as corporate debt and (later) equity issues. The remainder of the subsidiary's revenue was to come from underwriting federal, state, and municipal government issues. Hence, only those banks active in government issue markets had the ability to become active participants in the market to underwrite corporate debt.⁷

Faced with barriers to direct competition with investment banks through much of the 1980s, commercial banks sought through a variety of innovations such as the development of the loan sales market to make the traditional bank loan a more viable substitute for publicly issued debt. The development of the loan sales market permitted banks to further exploit economies of scale associated with the origination and servicing of loans and permitted increased diversification of the bank's loan portfolio. As Wolfson and McLaughlin (1989) note, at its outset the loan sales market consisted mainly of loans made to investment-grade firms. As the market matured, however, an increasing number of sales involved sub-investment-grade loans. By the end of the 1980s, the outstanding dollar volume of loans sold stood at \$53 billion in June 1988, for example, following 40% growth during the preceding 15 months (Wolfson and McLaughlin, 1989).

Parallel to the growth of the junk-bond market during the second half of the decade, the growth in the loan sales market was tied to increased funding of mergers and acquisitions activity by commercial banks. In Table I we report the June 30, 1989, exposure to so-called highly leveraged transactions (HLTs) of 12 large commercial banks ranked according to year-end 1988 assets. The HLT loan classification was not well defined prior to late 1989 and therefore it is not possible to produce a meaningful time series of such measures, nor are the measures directly comparable across banks.⁸ It is worth noting, however, that because these measures reflect only loans held in portfolio, they capture only a fraction of the commitment by the commercial banking industry to restructuring activity. Bankers Trust, for example, reported holding \$3.2 billion in HLT loans but it had originated about \$60 billion in such loans over the preceding three years (*Wall Street Journal*, December 13, 1988)—an amount

⁷ The gross revenue restriction was raised to 10% in September of 1989 in an attempt to broaden the segment of the banking industry for which this would be an attractive line of business.

⁸ The HLT loan classification was defined explicitly in a memo issued jointly by the Comptroller of the Currency, the Federal Deposit Insurance Corp., and the Fed on October 30, 1989. Henceforth, any loan made for a buyout, acquisition, or recapitalization was to be included in this category independent of the ratio of the firm's debt to assets.

TABLE I
HIGHLY LEVERAGED TRANSACTION (HLT) EXPOSURE

Commercial banks	HLT loans outstanding (\$ million)	Commitments (\$ million)	Total loans and commitments as percentage of all loans	Total as percentage of common equity
Citicorp	5300	6700	7.9	144
Chase Manhattan	3000	1100	5.6	94
BankAmerica	1100	1200	3.3	57
J. P. Morgan	NA	NA	NA	29
Security Pacific	2600	2000	7.8	124
Chemical Bank	3800	2300	13.2	225
Manufacturers Hanover	3700	1700	11.2	182
Bankers Trust	3200	3000	28.5	193
Bank of New York	3900	2000	17.1	221
Wells Fargo	3200	1200	11.1	197
First Chicago	1200	1900	10.6	166
Bank of Boston	2300	600	10.8	143

Note. Data are for June 30, 1989, HLT exposure of 12 commercial banks ranked according to year-end 1988 assets.

Source. Derived from data supplied by Oppenheimer and Co. and reported by the *Wall Street Journal*, November 30, 1989.

equal to nearly one-third of the approximately \$200 billion in junk bonds issued by the end of the decade. Thus despite the advantages of public debt financing, the evidence suggests that bank loans were an attractive substitute for financing the restructuring transactions of the 1980s.⁹

In summary, both investment banks and commercial banks compete in the market to fund sub-investment-grade debt. Historically, the market was dominated by commercial banks as competition was limited by the relative inaccessibility of public debt markets to less creditworthy firms. The 1970s and 1980s, however, witnessed a dramatic shift in the balance of power within this market corresponding with Drexel's development of a public market for original-issue sub-investment-grade debt. If Drexel maintained a unique capacity for the production of underwriting and trading services, their exit from the market weakened the forces behind the shift to borrowing through public debt markets. In the next section we develop several testable implications of this hypothesis.

⁹ To the extent that such loans were bridge loans made to fund deals until permanent financing could be arranged through the public markets, they complemented the offerings of the public markets.

3. HYPOTHESES

If Drexel's productive capacity was unique and not easily replicated in the short run, the firm's bankruptcy and subsequent exit from the market has two broad implications for its rivals. Obviously this implied a redistribution of underwriting business among rivals. Both investment banks and commercial banks positioned to underwrite corporate debt could be expected to benefit from new opportunities. Second, sub-investment-grade borrowers who were previously on the margin between seeking a bank loan or entering the public debt markets would now find the bank loan to be a more attractive alternative. Further, this reintermediation effect would increase with the value of the productive capacity destroyed by Drexel's failure.

One approach to testing the second implication would be to investigate the time-series properties of the proportion of sub-investment-grade borrowing accounted for by bank loans before and after Drexel's failure. Unfortunately, postfailure time-series data are limited. Further, this approach does not provide insight into the impact of Drexel's failure on the shareholder wealth of its rivals. Alternatively, we can study the capital market's response to Drexel's failure for evidence that Drexel maintained a unique productive capacity and the expectation of reintermediation of future sub-investment-grade borrowing. Specifically, we predict that Drexel's failure produced positive wealth effects for both its investment banking and its commercial banking rivals in the market for sub-investment-grade debt. Wealth effects can be the result of both new underwriting opportunities and reintermediation of sub-investment-grade borrowing. The assumptions underlying this prediction are that (1) Drexel enjoyed market power in the junk-bond market (Lang and Stulz, 1991), (2) the productive capacity that provided Drexel with this advantage over rivals was expected to be dissipated during the events leading up to and including the Drexel reorganization, and (3) the surviving industry structure was not perfectly competitive.

Few question that Drexel maintained market power in the junk-bond market. The expectation that components of Drexel's productive capacity would not survive reorganization seems equally likely. Rival bids for Drexel employees, databases containing names of contacts, and analytical software for trading, selling, and researching junk bonds (*Wall Street Journal*, April 4, 1990) suggest that the assets which allowed Drexel to dominate the junk-bond market were not completely destroyed by the time of Drexel's Chapter 11 filing. It was the firm's reputation, however, that appeared to be among the assets most important to its continued domination of the market. Since much of the firm's reputational capital appeared to be attached to Michael Milken, his removal from control of

Drexel's junk-bond operations almost certainly destroyed some portion of the firm's productive capacity. Further, even if some elements of this productive capacity survived Milken's departure and was transferrable, Drexel's repeated failed attempts to attract a merger partner or investor suggest that its value was more than offset by the potential liabilities attached to it during the events leading to the firm's bankruptcy filing.

Even with evidence of the destruction of Drexel's market power, however, we should not expect the firm's exit from the market to produce profit opportunities for underwriting rivals if the new industry structure was competitive. We offer some insight into the level of competition within the junk bond segment of the sub-investment-grade debt market by reporting in Table II the top 10 junk-bond underwriters and their market share for 1989. The top 10 underwriters accounted for approximately 98% of total market share with the top 6 (including Drexel) accounting for 82.8% of the total. Even allowing for the possibility that some of the larger money-center banks were in a position to enter this segment of the market, if underwriter reputation is positively related to the proceeds from a debt issue and reputation is acquired only in the long run, we predict that the junk-bond market was expected to remain concentrated in the short run. Consequently, we expect the new underwriting opportunities created by Drexel's exit from the market to produce profit opportunities for the firm's underwriting rivals (both investment banks and commercial banks).

As the discussion in Section 2.3 suggests, however, the junk-bond market represented only a relatively small segment of the broader sub-investment-grade debt market, and therefore the wealth effects associated with

TABLE II
TOP 10 JUNK-BOND UNDERWRITERS (1989)

Investment banks	Amount (\$ million)	Market share (%)
Drexel Burnham Lambert	9748.6	38.6
Shearson Lehman	2361.0	9.3
Morgan Stanley	2349.7	9.3
Merrill Lynch	2252.5	8.9
Goldman Sachs	2195.4	8.7
First Boston	2014.9	8.0
Salomon Brothers	1508.3	6.0
Donaldson Lufkin	1308.9	5.2
Bear Stearns	547.0	2.2
Kidder Peabody	375.0	1.5

Note. The table shows the top underwriters of junk bonds, dollar amount underwritten, and percentages share of the total dollar amount underwritten during 1989.

Source. Securities Data Co.

the creation of new junk-bond underwriting opportunities should account for only a fraction of the aggregate impact of Drexel's failure on its rivals within the commercial banking industry. Assuming that junk bonds were expected to be a relatively less attractive substitute for bank loans in the wake of Drexel's failure, Drexel's rivals within the commercial banking industry should also benefit from the expectation of reintermediation of some fraction of sub-investment-grade borrowing. Similar to the benefits associated with the redistribution of underwriting business, we contend that the benefits of reintermediation to individual commercial banks were unlikely to be competed away in the short run. The potential for adverse selection is widely recognized as a source of friction facing firms attempting to raise new capital (see, for example, Myers and Majluf, 1984). Black (1975) and Fama (1985) argue that the long-term relationships maintained by banks with their borrowers can mitigate this source of friction and thereby reduce the firm's cost of capital.¹⁰ Since the relationships between individual banks and their clients are built up over time, and therefore not easily replicated by competitors in the short run, the profit opportunities arising from these relationships should not be competed away in the short run.

The distribution of wealth effects associated with reintermediation of sub-investment-grade borrowers across the commercial banking industry should be directly related to the degree to which various segments of the industry faced competition from the junk-bond market. The discussion in Section 2 suggests that banks actively originating loans to fund corporate restructuring activity certainly faced competition from the junk-bond market. Further, we contend that money-center and large regional banks originating loans for large- and middle-market firms faced competition from the public debt markets. On the other hand, since the high fixed costs of information disclosure required to enter the public debt markets limit participation to firms bringing relatively large issues to market, we would not expect to observe a wealth effect among (presumably smaller) banks engaged primarily in loan origination for smaller firms.

The preceding is summarized in the following testable hypotheses:

H1. The failure of Drexel produced a positive wealth effect among the money-center banks best positioned to exploit new underwriting opportunities associated with Drexel's failure.

The wealth effect predicted in H1 should reflect both the benefits of new underwriting opportunities and the reintermediation of sub-investment-grade borrowing since these banks counted among their clientele rela-

¹⁰ This argument receives empirical support from both James (1987) and Lummer and McConnell (1989).

tively large firms and borrowers seeking funding for corporate restructuring.

For the remaining money-center banks and large regional banks not positioned to exploit new underwriting opportunities, we have the following prediction:

H2. Drexel's failure produced a positive wealth effect associated only with the expectation of reintermediation of sub-investment-grade borrowing for money-center banks and large regional banks not actively pursuing corporate debt underwriting opportunities.

Further, assuming that the reintermediation effect for these banks is no larger than that faced by the money-center banks actively seeking to underwrite corporate debt, we predict that

H3. The wealth effects realized by the money-center banks and large regional banks not actively pursuing corporate debt underwriting opportunities will be less than those realized by the money-center banks pursuing underwriting opportunities.

Given the assumption that the clientele of the remainder of the commercial banking industry is composed primarily of smaller firms with limited access to the public debt markets, we have the following prediction:

H4. The wealth effects associated with Drexel's failure realized by commercial banks were confined to the segment of the industry consisting of money-center and large regional banks.

Finally, we make the following prediction regarding Drexel's investment banking rivals in the junk-bond market:

H5. Drexel's failure produced a positive wealth effect associated with new underwriting opportunities for their investment banking rivals in the junk-bond market.

In the following section we describe the data and methodology used to test these hypotheses.

4. DATA AND METHODOLOGY

4.1. *Sample Selection*

We test H1, H2, and H3 by investigating the daily stock returns for a sample of money-center and large regional commercial banks and bank holding companies whose common stock was traded on the New York Stock Exchange or the American Stock Exchange from 1986 through the first quarter of 1990. The length of the sample period is a reflection of the

fact that the events leading to Drexel's demise, and therefore revisions to market expectations regarding their implications for the firm's rivals, occurred over a protracted period.

To be included in our sample we required that a bank or bank holding company exhibit no missing returns during the sample period and that it be free of firm-specific events that would interfere with our ability to determine the competitive effect of Drexel's failure on the firm. Satisfying the second criterion generally required that a search of the Wall Street Journal Index over the event windows defined below not reveal an announcement of an earnings surprise or other unexpected information about the future cash flows of the bank, a corporate control event involving the bank, or any other event idiosyncratic to the bank expected to affect shareholder wealth. The 25 bank holding companies satisfying these criteria are listed in Table III.¹¹ The sample includes both large money-center banks such as Citicorp with year-end 1988 assets of \$208 billion and regional banks, the smallest of which is Landmark Bancshares Corp. with 1988 assets of \$1.9 billion.

In several cases we retained for our sample a bank which may appear to have been subject to a confounding firm-specific event during the week of Drexel's bankruptcy filing. For example, on February 15, 1990, it was rumored that First Chicago was interested in buying First Bank System, Inc. The rumor was denied within the day and had no apparent impact on First Chicago's share value. On the same day, J. P. Morgan announced that the January 1, 1990, adoption of an accounting convention under which swaps would henceforth be carried at market value would boost first quarter earnings by \$230 million—well in excess of analyst forecasts. The earnings increase was the result of recognizing gains cumulated since the early 1980s. If market participants see through accounting conventions (see Kaplan and Roll, 1972), however, these gains were already impounded in Morgan's stock price.

More likely to have produced a real effect was Chase Manhattan's February 15, 1990, announcement of a revision to a dividend reinvestment plan that appeared to facilitate short selling of the firm's stock by arbitrageurs. Despite the fact that bank stocks were performing poorly at

¹¹ The primary source of missing returns was that many banks contained in the 1989 CRSP database either began trading on the NYSE or AMEX after January 1, 1986, or stopped trading before March 30, 1990. Thirty-eight banks were excluded for this reason. None of the remaining banks was excluded for having been subject to firm-specific events on the event dates defined below. We note, however, that Fleet Financial Group agreed to merge with Norstar Bancorp. on March 18, 1987, the same day the Fed approved Chase's application to underwrite commercial paper and one that we include among the days we investigate for wealth effects. We find no evidence of a wealth effect on this day nor do we find evidence that inclusion of Fleet in the sample influenced our results.

TABLE III
COMMERCIAL BANK SAMPLE

Commercial banks	1988 assets (\$ million)
Citicorp	207,666
Chase Manhattan	97,455
BankAmerica	94,647
J. P. Morgan	83,923
Security Pacific	77,870
Chemical Bank	67,349
Manufacturers Hanover	66,710
Bankers Trust	57,942
Bank of New York	47,388
Wells Fargo	46,617
First Chicago	44,432
Bank of Boston	36,060
NCNB	29,848
First Fidelity	29,777
Fleet Norstar	29,052
Barnett Banks	25,748
Norwest	21,750
Southeast	15,623
Signet	11,002
UJB Financial	10,888
Firststar	7,842
First Virginia	4,796
Equimark	3,353
Citizens First Bancorp	2,678
Landmark Bancshares Corp.	1,850

Note. Sample commercial banks are ranked by 1988 assets. The sample includes bank holding companies traded on either the American or the New York Stock Exchanges exhibiting no missing returns over the January 1986–March 1990 sample period.

the time, Chase officials blamed the plan for their declining share value. The *Wall Street Journal* reported that Chase's share price rebounded with the announcement of the plan revision.

Finally, on January 17, 1990, it was reported that First Fidelity had obtained an \$11.6 million judgement against Integrated Resources, which put First Fidelity in a position to attach assets available to satisfy the claims of Integrated's creditors. Integrated was in the process of negotiating an out-of-court restructuring agreement with its creditors and threatened to file for Chapter 11 protection if First Fidelity did not grant the firm a stay of execution of the judgement. Despite this threat, First Fidelity

continued to pressure Integrated and in early February obtained in New York state Supreme Court order allowing them to attach Integrated assets. It was apparently in response to this threat that Integrated filed for Chapter 11 protection on February 13, 1990. Presumably, First Fidelity's strategy was in the firm's interest, and therefore Integrated's bankruptcy filing might be viewed as a value-increasing event for First Fidelity. Further, it should be noted that both Chemical Bank (\$57.6 million) and Manufacturers Hanover (\$55.8 million) were among the 10 largest unsecured creditors of Integrated Resources.¹²

Given the relatively small number of banks available for inclusion in our sample, we have chosen to retain Chase Manhattan, First Fidelity, Chemical Bank, and Manufacturers Hanover. To allow for the possibility that the revision to Chase's divided reinvestment plan and the bankruptcy filing of Integrated Resources had real economic consequences for these firms, however, all tests reported in Section 5 were also conducted with these banks excluded from the sample. Our results and conclusions are robust to their exclusion in every case.

We also construct a sample of small banks traded in the over-the-counter market to provide evidence on H4. The sample is composed of the 40 largest banks and bank holding companies, measured by 1988 year-end market value, traded on the National Association of Securities Dealers' Automated Quotation (NASDAQ) system that satisfy the two criteria for sample inclusion applied to NYSE and AMEX banks.

Finally, we test H5 by examining the common stock returns of a sample of publicly traded investment banks. Four of Drexel's primary competitors listed in Table II (Bear Stearns, Merrill Lynch, Morgan Stanley, and Salomon) as well as Paine Weber meet the criteria for inclusion described above. A sixth firm, Shearson Lehman, went public in May 1987. Given the relative paucity of publicly traded investment banks, Shearson returns are analyzed for all event dates subsequent to the firm going public.

4.2. Methodology

We use the multivariate regression model proposed by Binder (1985) to test hypotheses related to Drexel's failure. The model is

$$\tilde{R}_{it} = \alpha_i + \beta_{1i}\tilde{R}_{mt} + \beta_{2i}\tilde{R}_{jt} + \beta_{3i}\tilde{R}_{st} + \beta_{4i}\tilde{R}_{lt} + \sum_{j=1}^J \gamma_{ij}D_j + \varepsilon_{it}, \quad (1)$$

where $\tilde{R}_{it}$ is the daily return on bank portfolio i on day t , $\tilde{R}_{mt}$ is the daily return on the CRSP value-weighted portfolio, $\tilde{R}_{jt}$ is the daily return on the

¹² The unsecured debts amounted to about 2.5% of each bank's market value.

Merrill Lynch high-yield-bond index, $\bar{R}_{st}$ is the daily change in the three-month Treasury Bill discount yield, and $\bar{R}_{lt}$ is the daily change in the 10-year constant-maturity Treasury Bond yield.¹³ The stochastic error term ε_{it} is assumed to be independent and identically distributed across time.¹⁴

The dummy variable D_j equals 1 during event window j and 0 otherwise. Thus, γ_{ij} represents an excess return to portfolio i during information event j . We estimate daily excess returns for the entire bankruptcy-filing week (Drexel's bankruptcy filing occurred after the close of trading on Tuesday). For the remaining information events described below, we estimate daily excess returns for the two-day window containing the day on which the information was announced to the public and the following day. The entire bankruptcy filing week is investigated in recognition of the fact that Drexel's filing represented the culmination of at least two trading days of negotiations with their lenders and regulators and because the remainder of the week witnessed considerable uncertainty regarding the implications of the firm's failure.

The junk-bond index is included to control for systematic variation in commercial bank and investment bank returns related to their junk-bond holdings. In their role as secondary market makers, investment banks active in the junk-bond market almost certainly held junk bonds in portfolio during the sample period. Further, Section 4c6 of the Bank Holding Co. Act of 1956 is silent with respect to bank holding company investments in corporate debt instruments. This has generally been interpreted as implying that bank holding companies face no limits on their holdings of corporate debt, junk bonds or otherwise, at the holding company level.¹⁵ If Drexel's decline produced expectations of decreased liquidity in the junk-bond market or had otherwise negative implications for the market as a whole, failure to control for this possibility could mask wealth effects associated with new underwriting opportunities. Excluding the index would appear to be a particularly severe misspecification during the

¹³ Flannery and James (1984) provide evidence that interest rate changes explain a significant proportion of the variation in bank stock returns. The interest rate indexes used here are similar to those used by Saunders *et al.* (1990).

¹⁴ Brown and Warner (1980, 1985) and Schwert (1981) discuss the use of portfolio returns to address the cross-sectional dependence problem that arises when event dates are clustered. Failure to correct for cross-sectional dependence introduces a bias toward rejection of the null hypothesis. Brown and Warner (1985) demonstrate, however, that market-adjusted return methods are relatively insensitive to the independence assumption and that assuming independence may increase the power of a test to identify abnormal performance. For completeness, we report results for both bank portfolios and individual banks.

¹⁵ In private conversations with staff members of the Federal Reserve Board it was suggested that although the confidential reports filed with the Fed of the corporate debt positions of bank holding companies in our sample do not classify debt holdings according to grade, it is possible that their holdings included junk bonds.

TABLE IV
EVENT DATES AND DESCRIPTIONS

Event date	Event no.	Event
11/17/86	1	SEC issues formal order of investigation targeting Drexel's high-yield junk-bond operations and its ties to Boesky
12/24/86	2	The Federal Reserve Board approves Bankers Trust application to engage in the placement of commercial paper issued by third parties
3/18/87	3	The Federal Reserve Board approves Chase Manhattan application to engage in underwriting and dealing in commercial paper
4/30/87	4	The Federal Reserve Board approves similar applications by Citicorp, J. P. Morgan, and Bankers Trust
1/25/88	5	Drexel is informed that the SEC will recommend civil charges of major securities-law violations against the firm and Milken; the announcement is the climax of a 15-month investigation
12/21/88	6	Drexel avoids criminal trial by pleading guilty to six felony counts and agreeing to dismiss Michael Milken and pay \$650 million in fines and restitution
1/18/89	7	The Federal Reserve Board grants commercial banks the power to underwrite corporate debt
3/16/89	8	SEC increases pressure to remove Milken from control of Drexel's junk-bond operations
3/29/89	9	Michael Milken is indicted on charges of major securities-law violations
4/13/89	10	Drexel agrees to a settlement of SEC civil charges that gives regulators unprecedented control over firm; the accord also allows Drexel to complete a separate criminal settlement that includes guilty pleas to six felony counts and \$650 million in fines and penalties
6/6/89	11	Integrated Resources defaults on part of a \$40 million commercial paper obligation
7/26/89	12	Congressional ban on thrift investment in junk bonds eliminates a major participant in the junk-bond market
2/13/90	13	Drexel Burnham Lambert files for bankruptcy

Note. Announcements are related to the decline and consequent exit of Drexel from the junk-bond market.

bankruptcy-filing week when junk-bond prices declined 2.61% on February 13th and then increased over 1% during the next four trading days.¹⁶

The multivariate regression model allows tests of hypotheses regarding the aggregate wealth effects produced by Drexel's failure by permitting estimation of excess returns at various points during the information arrival process. The extended period over which information related to

¹⁶ The mean daily return over the December 5, 1989, to April 27, 1990, interval was -0.02% with a standard deviation of 0.34%.

Drexel's demise reached the market and the incremental resolution of uncertainty regarding the consequences for market participants require that we examine the entire history of events preceding the firm's exit from the sub-investment-grade debt market.

We capture the economic impact of this sequence of events by estimating the excess returns associated with the 13 events listed in Table IV. Nine of the events reflect the challenges to Drexel's dominant position in the junk-bond market outlined in Section 2.2 as well as the firm's bankruptcy filing. The second, third, fourth, and seventh events correspond to the announcements of underwriting powers granted to commercial banks discussed in Section 2.3. We include these dates in our analysis to provide further insight into the market's reaction to this dimension of commercial banks' competitive response to the shift toward publicly traded debt. If we find no evidence of a wealth effect associated with the granting of these powers, it stands to reason that any wealth effects associated with Drexel's failure must be unrelated to new junk-bond underwriting opportunities. On the other hand, it should be noted that there existed a widespread belief within the banking community that the granting of underwriting powers to commercial banks was inevitable. Thus, the power of our tests of the economic implications of these decisions may be low.

Of course, the same caveat applies to the events included to capture the economic impact of Drexel's failure. The challenge to Drexel's domination of the junk-bond market was mounted incrementally over a four-year period. Our methodology permits only discrete observation of the continuous revision of market expectations regarding the likely success or failure of this challenge. Further, given the deliberative nature of the regulatory process, it is likely that the consequences of the SEC and Congressional decisions reflected in our event dates, as well as those of Drexel's ultimate failure, were partially anticipated by the market. Thus our estimates of the wealth effects associated with these 13 events are unlikely to capture the full economic impact of Drexel's failure on the firm's rivals within the commercial banking and investment banking industries. If our set of events encompasses the major increments of new information, however, our results will be indicative of the qualitative impact of Drexel's failure.

5. EMPIRICAL RESULTS

5.1. *Wealth Effects Realized by Money-Center and Regional Banks*

Parameter estimates for the multivariate regression model estimated for the portfolio of 25 money-center and large regional banks are reported in

TABLE V
REGRESSION RESULTS FOR THE PORTFOLIO OF 25 COMMERCIAL BANKS

Parameter	Equally weighted returns	Value-weighted returns
Intercept	-0.0005 (0.0105)*	-0.0005 (0.0825)
Market	0.8935 (0.0001)*	1.0861 (0.0001)*
Junk-bond index	0.4808 (0.0001)*	0.0776 (0.6399)
Event 8		
3/16/89	0.0084 (0.1200)	0.0221 (0.0034)*
3/17/89	0.0205 (0.0002)*	0.0359 (0.0001)*
Event 13		
2/12/90	0.0040 (0.4567)	0.0154 (0.0417)*
2/13/90	0.0144 (0.0218)*	-0.0026 (0.7644)
2/14/90	0.0119 (0.0289)*	0.0176 (0.0199)*
2/15/90	0.0230 (0.0001)*	0.0349 (0.0001)*
2/16/90	0.0098 (0.0722)	0.0055 (0.4653)
F statistic	104.1990 (0.0001)*	80.7000 (0.0001)*
R ²	0.8134	0.7714

Note. Parameter estimates for the multivariate regression model for both an equally weighted portfolio and a 1988 asset-value-weighted portfolio of the 25 banks are shown. Market represents the return on the CRSP value-weighted portfolio of NYSE- and AMEX-traded stocks. The junk-bond index is an index of all high-yield-bond prices compiled by Merrill Lynch. Event 8 represents the SEC demand that Milken be dismissed prior to settlement of civil charges. Event 13 represents the bankruptcy-filing week. *p* values are reported in parentheses.

* Significant at the 0.05 level.

Table V.¹⁷ The second and third columns of the table present parameter estimates for equally weighted and asset-size-weighted bank stock portfolios, respectively. For the sake of brevity we report only the two event

¹⁷ Comparison of the ordinary least-squares covariance matrix to White's (1980) heteroskedasticity-consistent covariance matrix yielded no evidence of heteroskedasticity and/or model misspecification in the regression disturbances. The Durbin-Watson test of first-order autocorrelation revealed no significant autocorrelation among the disturbances. Although not reported here, we included in the model a dummy variable to control for the January seasonal in stock returns observed by Keim (1983). We find no evidence of a seasonal in our sample firms.

windows (associated with the SEC's demand that Milken be dismissed prior to settlement of civil charges against the firm and the bankruptcy-filing week) for which the sum of the excess returns is statistically different from zero for both portfolios.

Several broad observations are in order. First, the absence of statistically significant excess returns during the remaining event windows is consistent across the 25 sample banks. Only in the case of event 4, the April 30, 1987, Fed approval of applications by Citicorp, J. P. Morgan, and Bankers Trust to underwrite commercial paper, is there even scattered evidence of significant excess returns.¹⁸ As noted earlier, these results could be the consequence of either the absence of a wealth effect associated with these event windows or our tests being insufficiently powerful to detect existing wealth effects.

Second, we find no evidence that either short-term or long-term interest rate movements add explanatory power to the model. On the other hand, the coefficient associated with the junk-bond index is statistically significant for the equally weighted portfolio, but it is mainly the smaller regional banks in our sample for which variation in the index accounts for a statistically significant fraction of stock return variation. We believe it is unlikely that this reflects greater junk-bond holdings among these institutions. Rather, we conjecture that the loan portfolios of these banks contain a larger fraction of high-risk loans, and thus variation in their values in response to business cycle fluctuations is more like that of the junk-bond index.

Consistent with the prediction that Drexel's market power was tied to Michael Milken, we find a two-day equally weighted portfolio excess return of approximately 2.8% (statistically significant at the 0.01 level) associated with the SEC's demand that Milken be dismissed prior to settlement of civil charges against the firm. The two-day excess return of 5.8% (statistically significant at the 0.01 level) for the asset-size-weighted portfolio suggests that the wealth effects were largest among the large bank holding companies in the sample.

We observe similar behavior in the bankruptcy-filing week excess returns. Once again the wealth effects appear to be greatest among the largest banks in our sample with a weekly excess return for the equally weighted portfolio of approximately 6.3% (statistically significant at the 0.01 level) versus an excess return of approximately 7.1% (statistically significant at the 0.01 level) for the value-weighted portfolio. The distribution of the wealth effect across the bankruptcy-filing week is consistent with information related to the filing having reached the market during the

¹⁸ Only Bank of Boston, Citicorp, First Chicago, First Fidelity, and Fleet Norstar exhibited statistically significant excess returns on either day of the two-day event window.

two trading days preceding the bankruptcy filing (2/12/90 and 2/13/90). The statistically significant wealth effects on February 12 for the value-weighted portfolio and February 13 for the equally weighted portfolio are consistent with larger bank stocks responding more rapidly to the new information. The large wealth effects on February 14 and 15, however, suggest that only after two full days of trading was the full impact of Drexel's failure reflected in bank stock prices.

Table VI sheds light on the variation in wealth effects within the sample by reporting individual bank excess returns associated with the SEC's demand that Milken be dismissed prior to settlement of civil charges and the firm's bankruptcy filing. F tests of the hypothesis $\sum_i \gamma_{ij} = 0$, where i is the bank index and events $j = 8$ and $j = 13$ are associated with the two-day window following the SEC's pressure to dismiss Milken and the five-day window surrounding the bankruptcy filing, respectively, yield the results:¹⁹

$$\begin{aligned}\sum_i \gamma_{i8} &= 0, & F &= 14.1936 \ (p = 0.0002), \\ \sum_i \gamma_{i13} &= 0, & F &= 26.0531 \ (p = 0.0001).\end{aligned}$$

The results from estimating the multivariate regression model for individual banks are therefore consistent with those obtained from portfolio excess returns.

H1, H2, and H3 predict variation in wealth effects across commercial banks as a result of differences in the expected benefits of both new underwriting opportunities and reintermediation of sub-investment-grade debt. If large banks are more active in the type of commercial lending for which junk bonds substitute or if there are economies of scale and scope in underwriting debt, firm size will proxy for the degree to which a commercial bank faced competitive opportunities in the wake of Drexel's failure. Consistent with this conjecture, we observe a Spearman rank correlation between 1988 assets and excess returns of 0.60 ($p = 0.0017$) during the bankruptcy-filing week.

Unfortunately, in addition to presenting only a crude measure of both lending and underwriting opportunities, using firm size to proxy for a bank's access to such opportunities offers no potential for distinguishing

¹⁹ These tests and the pairwise comparisons of portfolio excess returns reported later were conducted in the SUR framework using SAS PROC SYSREG. Binder (1985, p. 173) describes the test statistic and its asymptotic properties. Since the explanatory variables are identical across equations, system estimation influences neither the model parameter estimates nor their efficiency (see Judge *et al.*, 1982, p. 321).

TABLE VI
INDIVIDUAL BANK EXCESS RETURNS

Bank	Event 8	Event 13			
	3/16/89 and 3/17/89	2/12/90	2/13/90	2/14/90	2/15/90
Citicorp	0.0986 (0.0001)*	0.0329 (0.0487)*	-0.0420 (0.0290)*	0.0221 (0.1860)	0.0582 (0.0005)*
Chase Manhattan	0.0422 (0.0453)*	-0.0010 (0.9462)	-0.0269 (0.1176)	0.0175 (0.2403)	0.0578 (0.0001)*
BankAmerica	0.0559 (0.0602)	0.0237 (0.2598)	-0.0047 (0.8474)	0.0396 (0.0594)	0.0442 (0.0353)*
J. P. Morgan	0.0810 (0.0001)*	0.0441 (0.0049)*	-0.0356 (0.0488)*	0.0196 (0.2103)	0.0296 (0.0587)
Security Pacific	0.0412 (0.0383)*	0.0068 (0.6267)	-0.0021 (0.8969)	0.0131 (0.3499)	0.0166 (0.2381)
Chemical Bank	0.0900 (0.0001)*	0.0157 (0.3137)	0.0034 (0.8511)	0.0213 (0.1697)	0.0136 (0.3809)
Manufacturers Hanover	0.0861 (0.0001)*	0.0287 (0.0674)	0.0020 (0.9128)	-0.0022 (0.8899)	0.0359 (0.0224)*
Bankers Trust	0.0708 (0.0004)*	0.0204 (0.1502)	-0.0051 (0.7541)	0.0259 (0.0676)	0.0555 (0.0001)*
Bank of New York	0.0187 (0.3618)	0.0054 (0.7107)	0.0368 (0.0278)*	0.0055 (0.7049)	0.0127 (0.3831)
Wells Fargo	0.0347 (0.0579)	-0.0013 (0.9209)	0.0518 (0.0005)*	0.0034 (0.7931)	0.0347 (0.0073)*
First Chicago	0.0675 (0.0015)*	0.0106 (0.4801)	0.0240 (0.1647)	0.0391 (0.0090)*	0.0418 (0.0053)*
Bank of Boston	0.0327 (0.2136)	0.0055 (0.7664)	0.0222 (0.2984)	-0.0023 (0.9027)	-0.0008 (0.9653)
NCNB	0.0490 (0.0266)*	0.0082 (0.6006)	0.0113 (0.5300)	0.0110 (0.4817)	0.0175 (0.2632)
First Fidelity	-0.0183 (0.4638)	-0.0004 (0.9808)	0.0661 (0.0012)*	0.0455 (0.0101)*	0.0106 (0.5473)
Fleet Norstar	0.0010 (0.9648)	-0.0102 (0.4852)	0.0355 (0.0344)	0.0012 (0.9329)	-0.0001 (0.9964)
Barnett Banks	0.0059 (0.7599)	0.0067 (0.6248)	0.0158 (0.3146)	0.0140 (0.3042)	0.0300 (0.0278)*
Norwest	0.0104 (0.6260)	-0.0196 (0.1974)	0.0298 (0.0886)	-0.0049 (0.7477)	0.0281 (0.0640)
Southeast	-0.0084 (0.7247)	-0.0314 (0.0611)	0.0393 (0.0417)*	0.0201 (0.2308)	0.0300 (0.0739)
Signet	0.0216 (0.2962)	-0.0018 (0.9004)	0.0254 (0.1310)	-0.0079 (0.5872)	0.0039 (0.7891)
UJB Financial	-0.0085 (0.7167)	0.0004 (0.9788)	0.0219 (0.2527)	-0.0101 (0.5438)	-0.0134 (0.4179)
Firststar	0.0113 (0.5574)	-0.0005 (0.9695)	0.0170 (0.2692)	0.0055 (0.6823)	0.0119 (0.3744)
First Virginia	-0.0212 (0.2923)	-0.0061 (0.6670)	0.0350 (0.0325)*	-0.0084 (0.5551)	0.0122 (0.4291)
Equimark	0.0026 (0.9436)	-0.0247 (0.3424)	0.0058 (0.8469)	0.0208 (0.4239)	0.0502 (0.0540)
Citizens First	0.0357 (0.1684)	0.0033 (0.8578)	0.0178 (0.3971)	0.0081 (0.6570)	-0.0093 (0.6128)
Landmark Bancshares	0.0225 (0.3178)	-0.0144 (0.3641)	0.0144 (0.4298)	-0.0011 (0.9466)	0.0052 (0.7424)

Note. Individual bank excess returns associated with Event 8 (SEC demand that Milken be dismissed prior to settlement of civil charges) and Event 13 (bankruptcy filing) are shown. For Event 8 we report a two-day (3/16/89 and 3/17/89) excess return. For Event 13 we report daily excess returns for the day before Drexel's bankruptcy filing (2/12/90) and the following three days (2/13/90-2/15/90). *p* values are reported in parentheses.

* Significant at the 0.05 level.

between these two possible sources of the wealth effect observed in the commercial banking industry. Although there were no junk-bond issues underwritten by subsidiaries of commercial banks prior to Drexel's failure, there is evidence that some banks were better positioned than others to exploit any underwriting opportunities created by Drexel's exit from the junk-bond market. In particular, the relaxation of Glass-Steagall constraints on corporate debt underwriting followed pressure from J. P. Morgan, Bankers Trust, Citibank, Chase Manhattan Bank, and Security Pacific Bank. J. P. Morgan was the first to obtain clearance under the new guidelines for underwriting and dealing in corporate debt, followed by Citibank, Bankers Trust, and Chase Manhattan Bank. Bankers Trust was the first to capitalize on the opportunity with their underwriting of a \$150 million senior note issue for MorningStar Foods, Inc. Despite the fact that they had yet to underwrite a junk-bond issue, J. P. Morgan, Bankers Trust, First Chicago, and Citibank all stated their commitment to developing the distribution capability required to compete in the junk-bond market and attempted to demonstrate their commitment by devoting resources to junk-bond sales, trading, and research (*Wall Street Journal*, May 15, 1990). Finally, the debt underwriting rankings reported in Section 2.3 suggest that Chemical Bank was also aggressive in its pursuit of underwriting opportunities.

We attempt to shed light on the degree to which wealth effects realized by commercial banks reflected expectations of new underwriting opportunities by examining three equally weighted portfolios whose construction was based on the use of the preceding information to classify the banks according to their ability to exploit underwriting opportunities created by Drexel's failure. The first portfolio consists of 6 banks (Citibank, Bankers Trust, Chase Manhattan, J. P. Morgan, First Chicago, and Chemical Bank) which appear to have been most aggressive in their pursuit of debt underwriting opportunities. The second portfolio includes the remaining 5 money-center banks (Bank America, Manufacturers Hanover, Bank of New York, Wells Fargo, and Security Pacific) whose pursuit of investment banking opportunities appears to have been less aggressive. The third portfolio consists of the 14 remaining regional banks.

Returning to Table VI, we see that each of the 6 money-center banks in the first portfolio exhibited statistically significant excess returns following the SEC's demand that Milken be dismissed prior to settlement of civil charges against Drexel. On the other hand, only 2 of the 5 remaining money-center banks and 1 of the 14 regional banks exhibited statistically significant excess returns. We test whether these apparent differences across the three portfolios are statistically significant by reestimating the multivariate regression model for each of the three portfolios and testing the hypothesis $\sum \gamma_{i,k} = \sum \gamma_{j,k}$ for portfolios i and j , where event k is the

two-day interval associated with the SEC's call for Milken's dismissal. Pairwise comparisons of the three portfolios yield the test statistics

$$\begin{aligned}\Sigma\gamma_{1,8} &= \Sigma\gamma_{2,8}, & F &= 4.9025 \ (p = 0.0271), \\ \Sigma\gamma_{1,8} &= \Sigma\gamma_{3,8}, & F &= 23.9619 \ (p = 0.0001), \\ \Sigma\gamma_{2,8} &= \Sigma\gamma_{3,8}, & F &= 13.4397 \ (p = 0.0003).\end{aligned}$$

Similarly, tests of the hypothesis $\Sigma\gamma_{i,k} = \Sigma\gamma_{j,k}$ for portfolios i and j , where event k is the five-day interval associated with the bankruptcy-filing week (February 12–February 16), yield the

$$\begin{aligned}\Sigma\gamma_{1,13} &= \Sigma\gamma_{2,13}, & F &= 0.0073 \ (p = 0.9319), \\ \Sigma\gamma_{1,13} &= \Sigma\gamma_{3,13}, & F &= 1.5307 \ (p = 0.2164), \\ \Sigma\gamma_{2,13} &= \Sigma\gamma_{3,13}, & F &= 2.0976 \ (p = 0.1479).\end{aligned}$$

Taken together these tests provide mixed evidence on the relation between the degree to which a bank was expected to pursue debt underwriting and the impact of Drexel's downfall on shareholders' wealth. Further, it is possible that members of our three portfolios faced systematic variation in wealth effects associated with reintermediation of sub-investment-grade debt as well as in those associated with new underwriting opportunities. If this is true, the preceding test has little power to distinguish between the two effects. We reexamine this issue in Section 5.3.

Finally, we should note that thus far we have assumed that the entire wealth effect among commercial banks was the result of increased lending and underwriting opportunities. This ignores the fact that in addition to competing with Drexel to fund sub-investment-grade debt, some of our sample banks were also creditors of the firm and therefore played a role in "pulling the plug" on the firm. Drexel's financial distress was a value-increasing event for these banks if it created an opportunity to call a halt to value destruction and management expropriation of the assets of the firm (see Wruck, 1990). Although this would not explain the wealth effect associated with the SEC's demand that Milken be removed from control of Drexel's junk-bond operations, it could account for some fraction of the filing week wealth effect.

There is considerable circumstantial evidence in support of this claim. Estimates of Drexel's potential civil liabilities suggest that the firm may have been insolvent on a market-value basis by the time it filed for protection from its creditors. Further, the preceding discussion suggests that Milken was the key to Drexel's success in the junk-bond market and that the first-mover advantage he created was deteriorating after his depar-

ture. If so, allowing the firm to continue as a going concern could have led to further destruction of firm value. Finally, Drexel's creditors claimed that the firm's payment of an estimated \$300–\$350 million in bonuses (later revised to \$208 million plus stock bonuses that became worthless) in the weeks prior to the bankruptcy filing was evidence of an attempt by the firm's management to expropriate assets that would otherwise have been used to satisfy creditor claims. Even if one accepts the claim by Drexel's management that the firm committed to paying these bonuses in early 1989, this commitment came only shortly after the firm's settlement of criminal charges with the federal government requiring the payment of a \$650 million fine, a fine that ultimately contributed to Drexel's liquidity problems and in fact was only partially paid at the time of the firm's bankruptcy filing. The fact that on February 12, 1990, Drexel's management was seeking financing in an amount approximately equal to the amount paid out in bonuses has been cited as further evidence consistent with the claim that Drexel's management was attempting to expropriate some fraction of the remaining value of the firm.²⁰

Although the circumstantial evidence is compelling, we believe it is unlikely that calling a halt to potential value destruction and expropriation accounts for a large fraction of the bankruptcy-filing week wealth effect. Among our sample banks, Citibank and First Chicago, for example, both realized large filing week wealth effects and were among Drexel's major creditors. From Table VI we see that Citicorp realized an excess return of approximately 7% during the bankruptcy-filing week. Given Citicorp's market value of \$7.64 billion at the close of trading on Friday February 9, this translates into \$535 million. Similarly, First Chicago's 11.55% excess return and Friday closing market value of \$2.1 billion translates into a \$243 million wealth effect. In other words, the aggregate wealth effect realized by these two banks alone was approximately \$0.75 billion.

²⁰ Following the August 1991 approval by the bankruptcy judge of a class-action settlement of the firm's bankruptcy case which permitted the firm to proceed with its reorganization plan, the SEC issued a report on October 3, 1991, claiming there was substantial evidence that the firm's bonus payments represented fraudulent conveyance of the firm's assets, thereby suggesting grounds for future litigation by the firm's creditors to recover the payments. Although the report did not claim the firm violated securities laws by making the bonus payments, it did note that the firm may have been insolvent at the time of payment and that the payments contributed to the firm's financial distress by contributing to the firm's lack of liquidity. As part of the firm's operating plan subsequently presented to creditors, a trustee charged with recovering the bonus payments was to be appointed. The March 9, 1992, confirmation of Drexel's reorganization plan and the settlement of 150 lawsuits against Drexel provided for further claims against those included in the settlement only in the event that hidden assets are uncovered in the future. The settlement did not protect, however, a number of ex-employees who chose to maintain their claim to their entire bonus payment and a number of lower-level employees who, despite their desire to be included, were excluded from the settlement.

We compare this wealth effect to each firm's potential exposure to Drexel and its subsidiaries. Drexel's total liabilities were \$2.9 billion and a large fraction of these were unsecured debts. The smallest exposure among the Drexel's 20 largest unsecured creditors was \$10 million. Since none of our sample banks were among the 20 largest unsecured creditors, \$10 million is an upper bound on any sample bank's unsecured exposure to the parent company. Such an exposure, no matter how risky, is unlikely to account for the wealth effect realized by Citicorp and First Chicago.

Important among Drexel's subsidiaries were the registered broker-dealer and registered U.S. Government securities dealer operations. Although the assets available to satisfy the claims of the creditors of the U.S. Government securities dealer subsidiary were highly liquid, those of the broker-dealer included the firm's junk-bond portfolio as well as the more liquid equity portfolio. Both Citibank and First Chicago were among approximately 10–15 banks which were party to a \$1.2 billion senior, overnight debt exposure secured by these assets.²¹ An additional \$75 million in senior, subordinated net capital loans were backed by a letter of credit from First Chicago. Finally, both Citibank and First Chicago participated with Chemical Bank in the direct funding of an additional \$25 million in such loans.

We now begin to see the small scale of these exposures relative to the bankruptcy-filing week wealth effect. Even if Citibank and First Chicago carried the entire \$1.2 billion senior, secured overnight exposure along with the additional \$100 million senior, subordinated exposure, it seems unlikely that pulling the plug on Drexel accounted for a large fraction of a \$0.75 billion wealth effect. The overnight exposure, in particular, is likely to have posed little risk to Citibank and First Chicago—a contention supported by the renewal of the loan following the parent company's Chapter 11 filing. Since the actual exposure of the two banks was much smaller than \$1.3 billion and the subjective probability that assets could be liquidated to satisfy such debts was likely to have been high, we believe it unlikely that more than a small fraction of the bankruptcy-filing week wealth effects realized by commercial banks that were among Drexel's creditors is the result of a halt to potential value destruction and expropriation.²²

Finally, it is possible that Drexel's demise marked the beginning of a

²¹ This information and much of the information to follow was provided by Alan B. Miller of Weil, Gotshal, & Manges, attorneys for Drexel.

²² The senior, secured debt was ultimately paid in full subsequent to Drexel's Chapter 11 filing, but before the broker-dealer subsidiary filed for protection from its creditors. The senior, subordinated debt was paid off at the rate of \$0.80 on the dollar upon acceptance of the firm's reorganization plan.

more demanding regulatory environment, ultimately reflected in the Federal Deposit Insurance Corp. Improvement Act (FDICIA) of 1991, or that Drexel's failure may have predicted difficulty in the low-grade segment of the commercial paper market.²³ In the first case, we should observe a negative wealth effect for banks other than those directly benefiting from lending to former Drexel clients. In the second case, we should observe a negative wealth effect among those banks with commercial banks underwriting capabilities. Although we cannot test these hypotheses directly, we find no evidence of negative effects associated with Drexel's failure in either the sample of money-center and large regional banks or the small-bank sample described in the following section. Thus either the effects of these implications of Drexel's failure were negligible or they were dominated by positive wealth effects arising from new lending and underwriting opportunities.

5.2. Wealth Effects Realized by Banks Traded in the Over-the-Counter Market

In this section we investigate the prediction in H4 that the wealth effect associated with Drexel's failure was strictly a large-bank phenomenon. To do so we construct an equally weighted portfolio of the 40 highest market-value banks (year-end 1988) traded in the NASDAQ National Market System meeting the criteria for inclusion outlined in Section 4.1. We find no evidence of a portfolio wealth effect during any of the 13 event windows. Further, none of the 40 banks exhibited statistically significant excess returns associated with the SEC's demand for Milken's dismissal and only 4 (Baybanks, Boatmens Bancshares, First Florida Banks, and Summit Bancorp.) realized a statistically significant excess return during the bankruptcy-filing week. Thus, the wealth effects associated with Drexel's failure appear to have been concentrated within a narrow segment of the commercial banking industry which included only money-center banks and the major regional banks. This result is consistent with the hypothesis that smaller banks were perceived as neither having faced competition from the junk-bond market nor having been in a position to exploit underwriting opportunities created by Drexel's exit from the market.

5.3. Wealth Effects Realized by Competing Investment Banks

If we accurately assessed the relative ability of money-center banks to exploit underwriting opportunities created by Drexel's exit from the junk-bond market, our investigation of the three bank portfolios reported in

²³ We thank one of the referees for suggesting these potential implications of Drexel's failure.

Section 5.1 provides evidence consistent with some fraction of the wealth effect observed in the commercial banking industry being a consequence of new underwriting opportunities. It is possible, however, that banks designated as having been best positioned to exploit underwriting opportunities were also expected to benefit most from reintermediation of sub-investment-grade debt. We bring further evidence to bear on this issue by investigating the prediction in H5 that Drexel's failure produced a positive wealth effect associated only with new underwriting opportunities for their investment banking rivals. Presumably, these rivals were uniquely positioned to benefit from any underwriting opportunities arising from Drexel's failure. Unlike commercial banks, however, they would not be expected to benefit from reintermediation of sub-investment-grade debt.

Estimation of the multivariate regression model for the equally weighted portfolio of six investment banks listed in Section 4 yielded only minimal evidence of a wealth effect associated with Drexel's failure. Although the investment bank portfolio realized a 3.2% excess return (statistically significant at the 0.01 level) on February 13, 1990, the sum of the portfolio's excess returns during the bankruptcy filing week (1.6%) was not significantly different from zero. Further, it was only during the bankruptcy week that there was any evidence of a statistically significant wealth effect associated with Drexel's exit from the junk-bond market.²⁴

Again, these results must be interpreted with caution. If Drexel's failure was perceived by the market as having permanently shifted the balance between bank lending and junk bonds such that junk bonds were perceived as being a relatively less attractive financing alternative, any expectation that investment banks would realize increased market share as a result of the elimination of a rival (Drexel) could have been offset by an expectation that market share would be lost as a result of substitution of bank lending for junk-bond financing. Thus, we must temper our conclusion that Drexel's failure appears to have created minimal underwriting opportunities with the caveat that Drexel's failure could have created underwriting opportunities for its competitors within the investment banking community whose wealth effects were largely offset by the expectation of future underwriting opportunities being erased by the substitution of bank lending for junk-bond financing.

²⁴ We also found a 5.9% two-day excess return (statistically significant at the 0.01 level) associated with the March 18, 1987, Fed approval of Chase Manhattan's application to underwrite commercial paper. Further, each of the five investment banks in the portfolio (Shearson went public in May 1987) exhibited a statistically significant excess return during this event window. This result is difficult to reconcile with the fact that the Fed's approval could only have heightened the level of competition within the industry unless the Fed's approval granted less power to commercial banks or imposed more constraints on the use of such powers than was expected by the market.

6. CONCLUSION

We argue that bank loans and junk bonds are substitutes for one another, and therefore the recent failure of Drexel Burnham Lambert created a competitive opportunity for commercial banks as sub-investment-grade borrowers who were previously on the margin between seeking a bank loan or entering the public debt market turned to commercial banks to fund their debt. Consistent with this hypothesis, we observe economically and statistically excess returns to portfolios of money-center and large regional banks associated with both the SEC's demand that Milken be removed from control of Drexel's junk-bond operations (5.8%) and the firm's subsequent bankruptcy filing (7.1%). In contrast, we observe no such wealth effect among smaller banks traded in the over-the-counter market.

Since banks were granted the power to underwrite corporate debt prior to Drexel's failure, the observed wealth effect could be the result of expectations of increased underwriting opportunities following in the wake of Drexel's failure as well as expectations of a return to intermediated funding of sub-investment-grade debt. We attempt to measure the independent contributions of these two factors to the observed wealth effect by examining cross-sectional variation in the excess returns to portfolios of banks classified according to their likely ability to exploit any underwriting opportunities produced by Drexel's failure. Following the SEC's call for Milken's removal, the excess return to a portfolio of money-center banks designated as having been best positioned to exploit new underwriting opportunities was significantly different from zero and statistically greater than the excess returns observed for the remaining money-center and large regional banks. On the other hand, we find no such difference during the bankruptcy-filing week.

We attempt to illuminate this issue by investigating the performance of a portfolio of Drexel's investment banking rivals. Unlike commercial banks, investment banks would not have been expected to benefit from reintermediation of sub-investment-grade debt. Although small relative to the wealth effect realized by commercial banks (1.6% versus 7.1%), the bankruptcy-filing week excess return realized by the investment bank portfolio offers some evidence of a pure underwriting effect. With the caveat that our tests may not be sufficiently powerful to detect an existing wealth effect, we interpret these results as being consistent with the wealth effects observed within the commercial banking industry arising predominately from expectations of reintermediation of sub-investment-grade debt.

Much has been written in the popular press suggesting that the viability of the junk-bond market was directly related to Drexel's unique and domi-

nant role in the market. The observation of a positive wealth effect among commercial banks is consistent with Drexel having maintained some degree of market power and the expectation that at least some element of the technology that allowed Drexel to maintain this advantage over its rivals would be destroyed during the reorganization process.

REFERENCES

- ALTMAN, E. I., AND NAMMACHER, S. A. (1987). "Investing in Junk Bonds: Inside the High Yield Debt Market," Wiley, New York.
- AMIHUD, Y., AND MENDELSON, H. (1986). Asset pricing and the bid-ask spread, *J. Finan. Econ.* **17**, 223-249.
- BEATTY, R. P., AND RITTER, J. R. (1986). Investment banking, reputation, and the underpricing of initial public offerings, *J. Finan. Econ.* **15**, 213-232.
- BENVENISTE, L. M., AND SPINDT, P. A. (1989). How investment bankers determine the offer price and allocation of new issues, *J. Finan. Econ.* **24**, 343-361.
- BENVENISTE, L. M., AND WILHELM, W. J. (1990). A comparative analysis of IPO proceeds under alternate regulatory environments, *J. Finan. Econ.* **28**, 173-207.
- BINDER, J. J. (1985). Measuring the effects of regulation with stock price data, *Rand J. Econ.* **16**, 167-183.
- BLACK, F. (1975). Bank funds management in an efficient market, *J. Finan. Econ.* **2**, 323-339.
- BOOTH, J. R., AND SMITH, R. L. II (1986). Capital raising, underwriting and the certification hypothesis, *J. Finan. Econ.* **15**, 261-281.
- BROWN, S. J., AND WARNER, J. B. (1980). Measuring security price performance, *J. Finan. Econ.* **8**, 205-258.
- BROWN, S. J., AND WARNER, J. B. (1985). Using daily stock returns, *J. Finan. Econ.* **14**, 3-32.
- FAMA, E. (1985). What's different about banks?, *J. Monet. Econ.* **15**, 29-39.
- FLANNERY, M. J., AND JAMES, C. M. (1984). The effect of interest changes on the common stock returns of financial institutions, *J. Finance* **39**, 1141-1153.
- JAMES, C. M. (1987). Some evidence on the uniqueness of bank loans, *J. Finan. Econ.* **19**, 217-235.
- JENSEN, M. C. (1989). Eclipse of the public corporation, *Harvard Bus. Rev.*, 61-74.
- JUDGE, G. G., R., HILL, C., GRIFFITHS, W. E., LUTKEPOHL, H., AND LEE, T.-C. (1982). "Introduction to the Theory and Practice of Econometrics," Wiley, New York.
- KAPLAN, R. S., AND ROLL, R. (1972). Investor evaluation of accounting information: Some empirical evidence, *J. Bus.* **45**, 225-257.
- KEIM, D. B. (1983). Size related anomalies and stock return seasonality: Further empirical evidence, *J. Finan. Econ.* **12**, 13-32.
- LANG, L. J. P., AND STULZ, R. M. (1991). Intraindustry competition and contagion effects of bankruptcy announcements: An empirical analysis, Working paper, New York University.
- LOEYS, J. G. (1990). What explains the growth of high yield debt? in "The High Yield Debt Market" (E. I. Altman, Ed.), Dow Jones-Irwin, Homewood, IL.

- LUMMER, S. L., AND MCCONNELL, J. J. (1989). Further evidence on the bank lending process and the capital-market response to loan agreements, *J. Finan. Econ.* **25**, 99–122.
- MILLER, M. H. (1986). Financial innovation: The last twenty years and the next, *J. Finan. Quant. Anal.* **21**, 459–471.
- MYERS, S. C., AND MAJLUF, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have, *J. Finan. Econ.* **13**, 187–221.
- POST, M. (1992). The evolution of the U.S. commercial paper market since 1980, *Fed. Res. Bull.*, 879–891.
- SAUNDERS, A., STROCK, E., AND TRAVLOS, N. G. (1990). Ownership structure, deregulation, and bank risk taking, *J. Finance* **45**, 643–654.
- SCHWERT, G. W. (1981). Measuring the effects of regulation: Evidence from the capital markets, *J. Law Econ.* **25**, 121–145.
- TAGGART, R. A., JR. (1988). The growth of the “junk” bond market and its role in financing takeovers, in “Mergers and Acquisitions” (A. J. Auerbach, Ed.), Univ. of Chicago Press, Chicago.
- TAGGART, R. A., JR. (1990). Corporate leverage and the restructuring movement of the 1980s, *Bus. Econ.* **25**, 12–18.
- TUFANO, P. (1989). Financial innovation and first-mover advantages, *J. Finan. Econ.* **25**, 213–240.
- WHITE, H. (1980). A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity, *Econometrica* **48**, 817–838.
- WOLFSON, M. H., AND MCLAUGHLIN, M. M. (1989). Recent developments in the profitability and lending practices of commercial banks, *Fed. Res. Bull.*, 461–484.
- WRUCK, K. H. (1990). Financial distress, reorganization, and organizational efficiency, *J. Finan. Econ.* **27**, 419–444.